



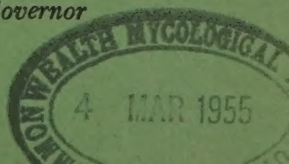
UGANDA PROTECTORATE

Annual Report
of the
Department of Agriculture

FOR THE YEAR ENDED 31ST DECEMBER, 1953

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UGANDA PROTECTORATE

DEPARTMENT OF AGRICULTURE

Annual Report

For the year ended 31st December, 1953

GENERAL REVIEW

By J. G. M. KING, O.B.E., Director of Agriculture

Foreword

In this and subsequent annual reports of the department an earlier method of reporting will be adopted, namely, the description of departmental activities on an individual provincial basis. The general administration of the department is on that basis and it is felt to be more appropriate and proper for provincial identities to be maintained, rather than to be submerged in a general report covering the Protectorate as a whole. This change will result in a more detailed report than has been the case in recent years and some repetition may be inevitable, but it is considered that it may be more helpful to readers resident in the Protectorate for whom the report is primarily written. The new system should also facilitate earlier publication in each year, as it will obviate the necessity of compiling a general report based upon reports submitted by provincial and other officers.

Weather

In general, rainfall was inadequate and badly distributed. The dry weather which set in during November, 1952, continued in most areas until the end of February or well into March, and even mid-April in some cases. Apart from a few favoured areas, normal and well distributed rain was not received until June and this was followed by relatively severe dry weather in July and August. The main autumn rains did not break until mid-October, but thereafter ample rainfall was received, falls being particularly heavy in December. With this rather confused and abnormal pattern of rainfall, spring crop planting and establishment tended to be delayed and growth generally was poor. Harvesting was late and yields light and it was fortunate that good rains were received during the last quarter of the year as these enabled shortages in the spring food crops to be remedied.

African Agriculture

CROP PRODUCTION

There was no change in policy during the year, which, as stated in last year's report, is directed towards the expansion and extension of

methods designed to improve the well-being of peasant farmers and their lands on as wide a scale as the resources of the department permit. Food production, which is of paramount importance in a country with a largely self-sufficient food economy, was maintained satisfactorily despite the difficulties presented by unfavourable weather throughout the greater part of the year. Food tended to be scarce during the first six months, but severe scarcity was felt only in Masaka District, where local supplies were supplemented by sales of maize meal in considerable quantities. In several areas the delayed onset of good spring planting rains accentuated the inadequacy of food supplies and, in consequence, there was an excellent response to planting campaigns, so that stocks of food were back to normal by the autumn. Full use was also made of the good second rains, particularly for the planting of root crops, and, in general, the year closed with good reserves of food in the ground. Unfortunately, in the Northern and Eastern Provinces, light harvests of finger millet prevented reserves of this crop being built up in the granaries to the desired extent.

The 1952-53 cotton crop production was the lowest for the past five years, largely on account of unfavourable weather conditions which resulted in an abnormally high proportion of late planting. Production amounted to 319,992 bales only.

The following table gives comparative figures of production over the past eleven seasons: —

TABLE A
COTTON PRODUCTION, 1943-1953

Season			Estimated Acreage	Bales of Lint (400 lb.)	Average yield per acre	Average price to grower (100 lb.)
					lb.	Shs. cts.
1942-43	..	..	874,776	112,548	173	12 56
1943-44	..	..	1,233,801	191,452	203	13 18
1944-45	..	..	1,072,493	272,567	337	14 83
1945-46	..	..	1,145,568	227,544	265	16 40
1946-47	..	..	1,253,257	231,745	247	18 45
1947-48	..	..	1,036,829	170,066	218	20 42
1948-49	..	..	1,555,371	391,240	333	29 61
1949-50	..	..	1,628,473	339,788	282	31 75
1950-51	..	..	1,535,200	346,465	301	43 16
1951-52	..	..	1,514,157	380,304	332	47 56
1952-53	..	..	1,472,553	319,992	290	48 60

Prices paid to growers were the same as in the previous season, namely, Shs. 50 per 100 pounds for the variety BP52, prices for other growths being based on this figure. The total value of the crop to the growers was estimated to be £10,373,899. The whole crop was disposed of by the Lint Marketing Board through free market auctions in Kampala, and the f.o.r. Kampala value for all sales amounted to £15,245,588. There was a satisfactory increase in acreage for the 1953-54 crop, some 1,600,000 acres being

planted. Unfortunately, weather conditions were unfavourable in many areas, particularly in Buganda, and, while at one time it was considered that a record or near record crop would be harvested, by the end of the year it was necessary to reduce estimates considerably to a figure of 390,000 bales approximately. The variety S47 was extended to the Busoga District of the Eastern Province and this variety is now being grown throughout that province and the Northern Province. In other areas there was no change from the variety BP52, except in Mubende District where a blackarm resistant strain of BP52 was planted.

Following upon the previous two seasons high crops, there was some reduction in the Buganda Robusta coffee crop, but, nevertheless, the satisfactory total of 27,000 tons of clean coffee was produced. Prices payable to growers were increased from 70 cents to Sh. 1 per pound in June and the total amount paid to growers was estimated to be of the order of £5,000,000.

Production of coffee in Buganda during the past eight years is shown below:—

TABLE B
AFRICAN COFFEE PRODUCTION—BUGANDA

	1946	1947	1948	1949	1950	1951	1952	1953
Coffee Cured (tons) ..	24,449	17,238	31,142	18,351	26,263	34,632	29,563	26,998

The Bugishu Arabica crop amounted to only 2,307 tons of parchment, which is only 104 tons more than in the previous season. Prospects for the following crop are better, however, and a total production of 3,000 tons of parchment is anticipated.

Details of crops for the past ten seasons are given in the following table:—

TABLE C
BUGISHU ARABICA COFFEE

Season	Parchment	Estimated Value
	<i>Tons</i>	<i>£</i>
1943-44 ..	3,679	105,592
1944-45 ..	2,705	73,740
1945-46 ..	2,817	97,169
1946-47 ..	3,058	107,215
1947-48 ..	2,996	121,692
1948-49 ..	2,857	173,799
1949-50 ..	2,852	184,859
1950-51 ..	3,896	442,104
1951-52 ..	2,203	377,575
1952-53 ..	2,307	633,040

There has been a tendency in recent years for coffee growers in Bugishu to lower their standards of cultivation, and in late 1952 and early 1953 an intensive campaign of improvement was initiated, which it is hoped will be reflected in production in due course.

In all districts of the Western Province increased interest in coffee as a cash crop was noticeable, and departmental nurseries were extended and increased in number to meet the demand for plants.

There was a satisfactory increase in the production of fire-cured tobacco in Bunyoro District, but in Mubende production again dropped. The air-cured crop in West Nile District was maintained, but illegal exports to the Sudan, which are difficult to check, were responsible for disappointing sales in the district. Good progress was made in the flue-cured tobacco industry in the West Nile, Acholi and Lango districts and the previous season's production was exceeded by a considerable margin, as is clearly shown in the following table:—

TABLE D
FLUE-CURED TOBACCO PRODUCTION

Area				1953	1952	1953	1952
				<i>acres</i>	<i>acres</i>	<i>lb.</i>	<i>lb.</i>
West Nile	..	..	..	1,102	1,037	2,769,554	1,505,108
Acholi	..	..	..	625	615	1,368,916	1,188,449
Lango	..	..	..	51	17	162,674	61,822
TOTAL ..				1,778	1,669	4,301,144	2,764,146

Oilseeds production was well maintained but, in consequence of the relaxation of marketing controls, details of sales of groundnuts and simsim are not available. Cottonseed production amounted to 118,000 tons, of which 67,950 tons were sold to local oil mills for crushing and some 28,000 tons were exported to the United Kingdom. Castor seed continued to rank high among exports with approximately 15,000 tons at a value of £850,000. In Kigezi District, the small production of linseed was maintained, but both in that district and in the West Nile production of sunflower decreased.

The 1953 maize crop, details of which are given in the provincial reports, made headline news during the year on account of its volume and the difficulties experienced in disposing of it. Total production for sale was of the order of one and a half million bags, of which Buganda contributed approximately one million bags derived from record plantings amounting to 236,000 acres. It is highly probable that this record crop was due primarily to the high prices for maize which prevailed during the previous season under a system of unrestricted marketing and disposal in a poor crop year.

Pulse crops consisting of beans, soya beans, field peas and grams were relatively unimportant cash crops, and in view of food shortages during the year sales declined.

The Kigezi flax crop had a poor 1952-53 season and intensive efforts were made to increase acreage and improve methods of cultivation. As make-weight, straw prices were increased and, in the event, a considerable increase in acreage was obtained. The future of the industry is, however, uncertain as it suffers from the handicap of not being able to grow more than one crop per year as a measure of control for Pasmu disease. In consequence, the overheads for the processing side of the industry are unduly heavy and militate against its profitable operation.

Vegetable production in Kigezi was expanded and production was such as to maintain despatches at the rate of two lorry-loads per week to Kampala and other markets.

Non-African Agriculture

Robusta coffee production by non-African estates continued to increase and the previous season's figure was exceeded by approximately 1,000 tons. Comparative figures of production during the past six years are as follows: —

TABLE E
NON-AFRICAN COFFEE PRODUCTION (ROBUSTA)

		<i>Tons</i>	<i>Value</i>
			£
1947-48	..	3,592	281,678
1948-49	..	2,581	227,247
1949-50	..	3,060	616,363
1950-51	..	3,846	940,504
1951-52	..	4,851	1,425,669
1952-53	..	5,921	1,846,697

It was the last year of operation of the Non-African Coffee Marketing Board, as, with the enactment of the Coffee Industry Ordinance in November, 1953, the Coffee Industry Board set up by that Ordinance became responsible for the disposal of all coffee produced in Uganda, with the exception of Bugishu coffee. Apart from Robusta coffee, the Board also handled 419 tons of Arabica coffee.

Only two additional tea planting licences were issued during the year; these covered a total of 460 acres. Despite unfavourable weather, there was a considerable increase in production and last year's figure was exceeded by one million pounds approximately.

The total production of the two sugar factories was 47,973 tons. Ratoon stunting disease of sugar cane has been discovered on the sugar estates and it is feared this will be responsible for a decrease in production in the future. Some progress was made towards the establishment of a third sugar estate and discussions and negotiations with an interested firm reached an advanced stage. A suitable site for the estate has been selected in the north of Ankole District, where an extensive area of rich soils is

available. Irrigated cultivation is contemplated from the abundant water supply available from the Kazinga Channel between Lakes Edward and George, and the potentialities of the scheme as a high yielding sugar estate are considerable.

Sisal production was confined to the Masindi Sisal Estates which produced a total of 900 tons of fibre of all grades.

Agricultural Development and Extension

Good progress continued to be made in the application of routine soil and water conservation measures. In Buganda, progress was particularly satisfactory and it is probable that established contour bunds can now be measured in thousands of miles. In Mubende District alone, a survey indicated that approximately 700 miles of bunds had been made. This method of controlling erosion has now been extended to the Western Province where previously trash bunds and grass strips were the accepted methods of control. Mulching of permanent crops and interplanting of line planted crops are also gaining acceptance, although in some areas coffee mulching is unpopular partly on account of the expense of application and partly because of danger from fire.

Agricultural competitions in all districts and numerous agricultural shows continued to hold the imagination of the people, and the competitive spirit which these extension methods engender are largely responsible for the high degree of co-operation and no little enthusiasm which is now the general attitude towards agricultural improvement in most districts.

In addition to emphasising the resting of land for adequate periods, the maintenance of fertility has been encouraged by the use of crop residues, household wastes and stock manures. The use of manure has spread rapidly in Buganda, particularly among coffee and banana growers who have not been slow to appreciate the improved yields which manuring provides.

The various small scale irrigation schemes in the Northern Province were maintained and small extensions were made in some cases. These schemes are not capable of wide practical application, however, as the capital works involved are too costly for the returns obtained, but, in areas of low and uncertain rainfall, they are justifiable, possibly in modified form, to ensure that supplies of planting material and seeds are maintained.

Agricultural education continued to receive as much attention as the limitations of the departmental staff available permitted. Courses were held at frequent intervals throughout the year at the main training centres of Bukalasa, Serere and Ngetta. These were varied courses catering for several categories of students, and, in all, approximately 1,200 students passed through these centres. Short course training on a smaller scale was also undertaken by Agricultural Officers on minor district experiment farms.

Investigations into the mechanisation of peasant farming under Uganda conditions continued during the year but it was primarily a period of consolidation and stock-taking rather than of expansion. On the Busoga

Development Farm a similar policy was followed on account of the heavy financial losses incurred during the previous year, but a full programme of development was considered justifiable on the Kigumba Farm and 1,000 acres had been cleared for cropping by the end of the year.

Tractor contract schemes again provided useful information on the economics of this aspect of farm mechanisation, and by the end of the year it was clear that hire rates were still considerably lower than the rates which would be necessary to cover the operations of an efficient commercial organisation. Major increases in the rates were therefore introduced. Careful consideration is being given to ways and means of increasing tractor hire services or alternative means of providing mechanisation facilities for African farmers. The present services operated by the department are primarily investigational in character and future development must be based upon commercial or other forms of private enterprise with or without Government participation. This may be on the basis of large-scale organisations operating in extensive areas or small units owned and operated by large individual farmers or farmers' groups for their own use and for hire to their neighbours. The problem is a difficult one, however, particularly from the economic angle, the maintenance of servicing and repairs facilities and, last but by no means least, the supply of trained drivers with adequate skill and mechanical knowledge.

Investigations

In the field of agricultural research numerous investigations on plant diseases and pests and soil fertility problems were conducted during the year. Three major diseases received special attention, namely, Panama disease of bananas, *polysora* rust disease in maize and a virus disease in sugar cane known as ratoon stunting disease. With regard to the first-named, a comprehensive study and survey of the banana crop was begun in order to ascertain the incidence of spread of the disease and to investigate the occurrence of resistant varieties. Fortunately, the disease is not yet obviously serious in Uganda.

The study of maize rust has been taken up with the East African Agriculture and Forestry Research Organisation with promising results which are being followed up in Uganda. The disease has been reported from several areas but, so far, has been serious nowhere except in the humid, low-lying area of Bwamba in the Toro District of the Western Province.

Ratoon stunting disease of sugar cane occurs widely in the Uganda sugar estates and, while the solution of the problem is theoretically easy, it is difficult in practice. Clean planting material can be produced with relative ease by means of a simple heat treatment, but the subsequent multiplication of this material without re-infection will be a formidable task.

Intensive work on the root knot eelworm pest of tobacco has shown that it is widespread in all tobacco areas and is not confined to tobacco beds

or cultivated land. Control will therefore be a difficult task, but preliminary trials indicated that injection of seed beds with D.D. increases the stand of plant in the field and their eventual yield and may well be a useful palliative measure.

Work on the protection of the cotton crop from damage by the *Lygus* bug is emerging from the stage of research to that of practical field trials. Low volume spraying with D.D.T. has been shown to be effective and the conditions under which it pays and the effects of the spray on other pests, especially bollworms, aphids and mites, is being studied.

Soil fertility studies were expanded and in ten new fertiliser trials cotton crops obtained little benefit from placed phosphate treatments, less from broadcast phosphate and none from nitrogen. Placed phosphate, however, was very effective on maize, but, when broadcast, dressings of phosphate were useless. Soil nitrate studies have been continued on several additional soil types and strong accumulations of nitrate in the topsoils were found to be universal. Soil structure studies have centred on the analysis of the virtues of elephant grass as a soil cover during periods of rest. Yields of crops following the resting period were found to be much more closely correlated with improved soil nutrient status than from improved soil structure.

The decline in productivity of drained papyrus peat swamps due to the formation of excessive acidity was found to occur in districts other than Kigezi where the phenomenon was first perceived. Two experiments on such a swamp in that district demonstrated that the condition could be rectified and crops grown with the addition of quite small dressings of lime and phosphate.

Staff

The new appointments envisaged in last year's report were effected during the year and, in this connection, it should be noted that reference to the appointment of a Botanist made in 1952 was omitted in error. Four new appointments of Agricultural Officers will be made in 1954, but, unfortunately, further losses from retirements, both among field and research officers, are anticipated. The present and future staff position is therefore by no means satisfactory, and the development plans of the department cannot be fully implemented without considerable accessions to its strength.

In conclusion, I know it would be the wish of all members of the department to pay tribute in this report to its late Director, Mr. T. Y. Watson, M.B.E., who relinquished his post as Director at the end of the year in order to take up his new appointment as Secretary for Agriculture and Natural Resources. As a department, we are indeed fortunate that in his new capacity we shall still have the benefit of his advice and guidance and his wide and sound knowledge of Uganda agriculture.

ENTEBBE,
JULY, 1954.

J. G. M. KING,
Director of Agriculture.

ANNUAL REPORT—BUGANDA PROVINCE

By D. R. N. BROWN, *Assistant Director of Agriculture (Field)*

Section I—General Review

WEATHER

January and February were exceptionally hot and dry throughout the Province. Scattered showers occurred in March, particularly towards its end, but in no area had the spring rains arrived with full intensity by the end of the first quarter. For the rest of the year Mubende District was more fortunate than the rest of the province. The spring rains there were average, and sufficient rain fell during the mid-year months to permit planting and growth of crops to continue with little check. In Masaka and south-west Mengo the spring rains were deficient, and there was a prolonged and severe drought from the end of May until August. It was not until October that good planting weather again returned. In the rest of Mengo the spring rains as a whole were below average, although April rainfall was high. In Mengo also, except for the south-west, rain was more plentiful than usual in June and July, and the early planting season was extended. The main autumn rains held off throughout the province until October and November when they were exceedingly heavy. In December the north of the province had only light, scattered showers. Masaka and Mubende districts had moderate rains for most of the month, decreasing towards its end, and wet weather continued in south-east Mengo right up to the end of the year.

AFRICAN AGRICULTURE

The 1952-1953 cotton crop in Buganda was as follows, in the separate zones. The 1951-1952 crop is shown for comparison.

Zone	1952-1953		1951-1952	
	Tons Seed Cotton	Bales	Tons Seed Cotton	Bales
Mengo Entebbe ..	47,616	81,329	60,511	103,353
Mubende	7,969	13,611	10,526	17,978
Masaka	4,438	7,456	5,302	9,057
TOTALS ..	61,023	102,396	76,339	130,388

The average production for the ten-year period 1943-1952 inclusive was 71,787 tons seed cotton. The small crop in 1953 was due to a small acreage, which in turn was because of dry weather in late July and August, 1952. The 1953-1954 planting was estimated to be 398,074 acres, of which an unusually large proportion was early planted. This acreage would have been greater had August not been a dry month.

Coffee prices were higher than ever before, and many farmers devoted the bulk of their resources to this crop in preference to cotton. 26,998 tons of clean coffee were inspected for export, as compared with

29,563 tons in 1952. The very dry weather early in the year did not encourage free flowering and a large crop. The price of Robusta coffee (dry cherry) was raised to Sh. 1 per lb. at curing works, as from 19th June, 1953. Much neglected coffee was resuscitated, and some new acreage was planted. The total cash return to African farmers in Buganda from the sale of coffee was estimated to be roughly five million pounds, compared with three and one-third million pounds from cotton. This is the first year in which the return from coffee has exceeded that of cotton. Good progress was made with enforcement of the Buganda Agricultural Law which prohibits coffee being dried on the bare ground.

The crop of Heavy Western tobacco in Mubende District was small, partly because many farmers considered castor seed or cotton gave a better return for labour expended. The acreage was 823 compared with 1,322 in 1952. The crop suffered from drought in the nursery, and from eelworm and a very severe attack of leaf curl after planting out, which materially reduced yields. Sales were 295,981 lbs. of fire-cured, and 50,244 lbs. of air-cured leaf, a total of 346,225 lbs. compared with 517,793 lbs. in 1952. Prices remained at 74 cents for first grade, and 50 cents for second grade leaf, as in the previous year.

Maize fetched a very high price in 1952 because the crop was short, the demand high, and the internal price freed. In memory of the lucrative return in 1952, because planting was officially encouraged, and because a price of approximately 15 cents per lb. to the growers was announced before planting took place, a very large acreage of maize was sown. It was estimated to be 236,346 acres for the spring crop, compared with the previous largest of about 150,000 acres. The surplus of maize sold in Buganda was of the order of a million bags of 200 lbs. each, worth approximately one and one-third million pounds sterling to the growers. Maize was, therefore, the third most valuable cash crop to the growers. The quality was good on the whole. The greatest difficulty was experienced in buying and disposing of a crop which was more than double the previous largest.

The tonnage of mixed beans sold was 2,836 compared with 1,109 in 1952. Soya beans remained unpopular, and only 342 tons were marketed. Production of castor seed increased, but the price fell. Exports from Buganda amounted to 13,112 tons compared with 11,229 tons in 1952, but the fall in price reduced the receipts of growers by £86,000 to £534,420.

Unattractive prices caused a further drop in production of chillies which was 203 tons compared with 319 tons last year.

Except in Mubende District where the weather was kinder, food was scarce during the first half of 1953. There was never any serious deficiency of food in the rural parts of Mengo District, but the population had to rely on cassava and purchased maize meal to a greater extent than usual. Plantains were scarce, and high-priced, until the autumn. The

shortage of suitable foods was alleviated by an early and abundant bean harvest, and by consumption of green maize and sweet bananas. The shortage was most severe in Masaka District where large quantities of maize meal were sold through normal retail channels. People were alarmed by the food shortage, and diligently planted an abnormally large acreage of food crops in the spring.

Soil and water conservation continued to make excellent progress in all districts. Many hundreds more miles of bunds were constructed, and sources of soil wash, such as house compounds, cattle tracks, roads and paths, were protected. The Baganda have come to appreciate the necessity for conserving their land, and the department's efforts met with much less opposition than formerly.

There was a welcome increase in the use of manures. Most cattle-keepers now apply all the manure produced to coffee or bananas, and some are reluctant to reduce their herds of breeding animals because they want all the manure they can get, which now has a market value. The Sesse Islands, particularly, made progress in mixed farming. There was also an increase in the use of coffee husks, and cotton seed husks as mulch and manure.

Co-operative enterprise continued to expand. The three co-operative ginneries produced 5,705 bales of lint, and were obliged to turn away to other ginneries a large quantity of seed cotton from primary societies to avoid exceeding their quotas. Nearly 7,000 tons of Robusta coffee were sold co-operatively, and approximately 75,000 bags of maize.

The number of registered agricultural marketing societies increased from 201 to 382.

African farmers had a larger gross return in 1953 than ever before. The total sum paid to producers for the main cash crops exceeded £10,000,000. The large coffee farmers have become very well-to-do, and even the smaller farmers with only a few acres have been able to gain enough capital to build permanent houses and to develop their estates. The Uganda Credit and Savings Bank has also assisted agricultural development. During 1953, 167 loans to a total value of £22,305 were approved for agricultural projects. Agricultural loans comprise nearly half the total loans granted.

Whilst much progress has occurred in the scale and level of African farming in Buganda, yields per acre, and therefore total production, are far lower than they could be with more efficient and more intensive farming, particularly in the more fertile areas. For instance, the mean yield of seed cotton per acre in the Mengo/Entebbe zone in 1952-53 was only 399 lbs. per acre, whilst the average of the department's cotton variety trials all over the province was 770 lbs. The mean yield of Robusta coffee throughout the whole of Buganda was in the neighbourhood of $2\frac{1}{2}$ cwt. of clean coffee per acre, whilst the Robusta coffee at Bukalasa Farm has averaged 15 cwt. per acre of clean coffee for the past 15 years.

Buganda has nothing like realised its enormous potential. In 1953, maize production was double the previous record. There is no doubt that more efficient farming and more effort could produce the same result with other crops. There are some outstandingly hard working and efficient farmers, but the general standard is still deplorably low.

NON-AFRICAN AGRICULTURE

The Uganda Sugar Factory at Lugazi produced 21,002 tons of sugar during 1953 compared with 25,025 tons in 1952. Dry weather and poor ratoon crops prevented high yields. Buganda tea estates manufactured 3,009,874 lbs. of made tea, roughly 69,000 lbs. more than during the previous year. The high prices encouraged better and more cultivation of coffee and tea. Although a number of coffee estates were highly productive, there is still far too much coffee on non-African estates yielding much less than it would with more intensive methods. Interest was retained in papain, although prices fluctuated. Chillies, onions, castor seed, maize, sugar for yellow jaggery, and vanilla were amongst minor crops grown.

AGRICULTURAL INDUSTRIES

The cotton industry, under reorganisation, operated 44 ginneries in the Mengo/Entebbe zone, 11 in the Mubende, and 8 in the Masaka zone, during the 1952/53 season. The mean bale out-turns per ginnery of AR and BR together were: —

Mengo/Entebbe zone	...	...	...	1,848 bales
Mubende zone	...	...	...	1,235 bales
Masaka zone	...	...	...	932 bales

A new ginnery was erected at Kireka, a few miles outside Kampala, and the building of another was started at Nazigo in Bugerere County. These were in place of two formerly in Kampala. Rebuilding of other ginneries started in conformity with the specifications in the Cotton Ordinance, 1952.

The enormous production of cotton in eastern Buganda, particularly in the south of Bugerere County, and the small production in the west necessitated a large movement of raw cotton over long distances to comply with the legal obligation upon ginneries to restrict themselves to their quotas. For the same reason the co-operative ginneries were unable to accept all the cotton collected by primary societies. The movement of raw cotton was unfortunately in a direction away from the nearest exporting point, and was complicated by the Sezibwa Bridge still being out of commission.

The Coffee Industry Ordinance, and the Coffee (Export Duty) Ordinance became law on 1st November, 1953. The former Ordinance established a Coffee Industry Board, and made provision to control curing

works, estate coffee factories, scheduled hulleries, and the marketing and processing of all coffee except Bugishu coffee. The Coffee (Export Duty) Ordinance set a scale of payments for export duty based upon the price of coffee f.o.b. Mombasa, and entitled those liable for income tax to a refund of half the export duty their coffee would pay.

There were four coffee curing works in operation in Mengo District, and two in Masaka, and seven hulleries at various centres in both districts. The rough hulled coffee produced by the latter received final curing and grading at a curing works. During the year, one of the Kampala curing works moved to a new factory in the industrial area, and the other erected a new factory there preparatory to moving. The Luzira factory was also under reconstruction. The Nkoba za Mbogo Co-operative Society opened a coffee factory near Masaka and processed the parchment coffee grown on their own estates.

Four Africans used pulperies on their estates in Masaka, one of them having hulling machinery also. A number of applications were received from Africans anxious to erect new curing works under the provisions of the new Coffee Industry Ordinance.

There were 19 oil mills in Buganda, of which 18 were working. The total amount of cottonseed crushed by them was 26,000 tons of BP52 fuzzed seed, and 1,600 tons of delinted seed. The seed was sold at auction and average prices were Shs. 342/47 per ton for fuzzed seed and Shs. 408 per ton for delinted seed. Total receipts from the sale of this seed were £447,852.

There was no control of the operation of maize mills in Mengo District, and the number gristing is not known. Many estates gristed for their own labour, which expressed a strong preference for well-milled, clean maize meal. For this reason, some concerns arranged for their maize to be conditioned at the Jinja plant, and hygienically stored.

MARKETING

The cotton season opened on 19th January in the Mengo/Entebbe and Mubende zones, and on 9th February in the Masaka zone. It closed on 27th March in the Mengo/Entebbe zone, and on 10th April in the Masaka and Mubende zones. Rotational cotton marketing was arranged in Mubende and Masaka districts at remote centres where little cotton was offered for sale. Fair average quality standards of good, raw cotton were set in all zones, but it was difficult to induce growers to grade their cotton properly. Except for Bugerere County, where the enormous production and failure to complete the new Sezibwa Bridge made evacuation very troublesome, marketing was uneventful. The fear of buying more than their quotas led some ginneries to be dilatory in the collection of cotton and growers in Bugerere, Kyagwe and parts of Bulemezi counties made justifiable complaint of inadequate transport. The reduced competition resulting from establishing statutory cotton pools brought down the com-

mission to growers' associations and groups for bulk deliveries to ginneries from Sh. 1 and cents 50 to cents 50 per hundred pounds of seed cotton. Owing to the fact that the ratio of ginning quotas to production varied widely in different parts of the Mengo/Entebbe zone, large and costly movements of raw cotton were necessary to comply with the Pool agreement that no ginnery must gin more than its quota.

Coffee marketing went smoothly. Buying was temporarily stopped at the end of September in order to clear out all coffee from the markets before the Coffee Industry Ordinance came into effect. It restarted on 20th November. During the closure some farmers in need of ready cash sold some of their crop at low prices. The price fixed by law at curing works was 70 cents per lb. of Robusta (dry cherry) until 18th June, after which date it was raised to Sh. 1. Corresponding increases were made at the same time in the prices of other types of coffee. There was illegal export of coffee to Tanganyika Territory, particularly in the first half of the year before the Uganda price was raised.

In view of the very large crop expected, maize marketing started early in Mengo and Mubende districts on 10th August, and in Masaka District on 20th July. The season closed everywhere on 30th November. The price to growers was fixed in Masaka and Mubende districts at 15 cents per lb., and in Mengo was on a sliding scale from Shs. 38 to Shs. 35 f.o.r. per bag of 200 lbs., depending upon moisture content. The early opening was to give as much time as possible for the conditioning plant to deal with the crop. It turned out that production was far too large for the capacity of the plant, and much had to be disposed of without prior conditioning. Primary storage became congested, and buying was interrupted. The maize in the districts had not all been cleared by the end of the year. Owing to the early opening of the season, the first consignments offered for sale were wet, but moisture content improved as buying progressed, and in general quality was fairly good. Growers in Mengo District obtained from 12 to 14 cents per lb. for their maize.

The Produce Marketing Ordinance, 1953, which was enacted on 14th January, amended and consolidated the law relating to the marketing of primary produce, and provided safeguards against shortage of staple foods. Sesame, groundnuts, maize, mixed beans, tobacco, nicotine tobacco and wattle bark were declared to be controlled produce. Fair average quality standards were established for maize, mixed beans, groundnuts and sesame. There were no restrictions on the primary marketing of mixed beans, groundnuts and sesame, except that buyers were required to buy under permit, buying was allowed only during gazetted seasons, and returns of purchases had to be submitted monthly. Elementary storage rules were also imposed. Unrestricted export of mixed beans was allowed, and of groundnuts and simsim and other oils and cakes after the Commissioner for Commerce was assured that the needs of Uganda, and of other East African territories, were satisfied. The limitations on the granting of export licences for groundnuts early in the year depressed prices to growers,

and they rose immediately to the high level of 42 to 45 cents per pound when free export was allowed later. The freeing of the markets in these commodities reduced the distortion of the farming economy and encouraged trade. Adequate supplies were retained in Uganda; neighbouring territories benefited from exports, and prices rose to their natural level, so that production had a better chance of equating with demand. The Government, through the Department of Commerce, offered to buy mixed beans at Shs. 400 per ton f.o.r., but was unable to obtain any. Prices for export towards the end of the year were between Shs. 485 and Shs. 560 per ton f.o.r. Kampala. The average price during the year to growers for their beans was from 20 to 25 cents a lb.

Two licensees under the Produce Marketing Ordinance bought the tobacco crop in Mubende District. Total sales were 295,981 lbs. of fire-cured, and 50,244 lbs. of air-cured leaf. The price was 74 cents for Grade I and 50 cents for Grade II leaf. Eighty-one per cent. of the fire-cured leaf and seventy-seven per cent. of the air-cured leaf were put into the first grade. Weather was favourable during marketing, and the leaf was sold in good condition.

SOIL CONSERVATION

Further excellent progress was made in conserving rain water and the fertility of the soil in all parts of Buganda. African farmers are learning that soil and water conservation are a means to maintaining high production and not an end in themselves. Now that the accumulated benefits of conservation over a number of years are becoming evident to all, much less opposition to the department's programme is encountered. The insurance which conservation provides against soil-wash is not always immediately apparent, but the better crops which result from inducing a larger proportion of the rain to penetrate into the soil where it falls, instead of running off, are quickly appreciated. Tied bunds, approximately on the contour and planted with *paspalum* grass, continued to be the accepted conservation measure in the wetter and more fertile parts of Buganda. Where land was cultivated mechanically, narrow uncultivated strips were substituted for the tied bunds which hindered the passage of machines. The strips were effective in preventing soil movement, but not so efficient in holding up water as the bunds. Communal effort was general and bunds were built many miles in length encircling complete hills. Once the work is done, it requires only minor maintenance which is the duty of the occupant of each individual holding. Altogether thousands of miles of bunds have been built. In Mubende District alone surveys indicated that 686 miles of bunds existed, and Mengo is far bigger and has far more. Progress in north Kyagwe, and in Gomba County and parts of Masaka District was particularly good.

Annual competitions are set by the department and the chiefs and their councils are provided with details of the objectives aimed at. They and the local departmental field staff are then left to do the executive work.

It is noteworthy and reassuring that the best of the Gombolola Councils have taken a keen interest in the work and greatly furthered the campaigns. Generally, the first encircling bund on a hill is just at the top of the cultivation level and it is aligned by eye. Parallel bunds are then put in below at roughly thirty-yard intervals. They go through plots of annual and permanent crops, through resting land and thicket, and are quickly anchored in position with *paspalum* grass. When the cultivated land has been protected, the work is extended uphill to stop the rush of run-off water which comes sweeping down the almost bare slopes with the first rains after the grass has been burned. In addition to bunding, sheet erosion within plots was reduced by means of interplanting row crops with ground crops, such as beans and groundnuts. Good spacing with lines across the slope and weeds hoed into rows between the lines also helped to prevent movement of soil and water. Tied ridging of sweet potatoes, as opposed to making small mounds, gained acceptance slowly. Mulching of bananas was general, but of coffee infrequent, partly because of expense and partly because of danger from fire. In the Sesse Islands mulching was more emphasised than bunding, and nearly all permanent crops were protected in this way. Competitions for agricultural betterment were held in all districts, both between administrative units, growers' groups and individuals. The presence of distinguished visitors at the judging and presentation of trophies added to the prestige of winners, and encouraged interest. House compounds, roads, tracks and gullies received attention everywhere, and it is now rare to see roof run-off rushing unimpeded down the hill.

During the year special emphasis was placed on the use of household waste, stock manure, coffee husk, cotton seed husk and other crop residues. A common propaganda policy was agreed with the Veterinary Department, and the field staffs of both departments now encourage preparation and use of stock manure. The use of manure has spread rapidly and not very much is wasted now. A particularly effective method has been to use dung and urine-impregnated grass as a mulch and manure in banana gardens. Its use has greatly extended the cropping season and increased yields. There is no doubt that with intensive management seasonal shortages of plantains could be reduced. Night-kraaling herds of stock has been very effective in resuscitating derelict coffee and in controlling weeds. It has also been responsible for increasing the fertility of plots resting in rotation. Compost in both Entebbe and Kampala was more abundantly used on the township gardens and less surplus was available for Africans. 220 tons were distributed to African farmers in Entebbe and 513 tons in Kampala. Coffee husk was more generously applied, particularly in Masaka District. One co-operative society cut a road to the husk dump at a curing works and its lorries returned with a load whenever coffee was brought to market. Everywhere public bodies have awakened to the need to prevent soil wash, and most schools, hospitals and other institutions have taken protective measures. Prominent amongst those who have

neglected soil and water conservation have been some non-African estates. Some tea estates were obliged to protect their land by the conditions of their planting licence, but other estates could not be compelled and some set very bad examples to neighbouring cultivators.

Fourteen new boreholes were sunk, bringing the total in the province to 243. A few new valley tanks were constructed in Buruli County. Many springs were protected for human water supplies.

The problem of the "West Masaka Hills" was reviewed during the year and it appeared that the solution of proclaiming and preserving extensive forest reserves would be an unnecessarily cumbersome one. It was proposed that land use in the region should be controlled through the Temporary Occupation Licence system, and this suggestion is still under consideration. In the meantime, although one block of hills on Crown land was surveyed in 1952, it has not been declared a forest reserve and survey of other areas has been discontinued.

In Singo, where 142 square miles of scrub-covered hills on Crown land have already been gazetted as forest reserves, the demarcation of boundaries was continued and one new reserve was surveyed but has not yet been legally proclaimed. A similar area of Crown land in north-east Buwekula has been surveyed and mapped with the intention of gazetting it as a forest reserve.

Output returns from saw mills obtaining their timber on private land indicated that 1 million cubic feet of logs were cut on such land in 1953, i.e., twice the volume taken from forest reserves. Timber-cutting on mailo land is often followed up by complete clearing of the forest for cultivation, and this total gives an idea of the rate at which such clearing is progressing. The individual areas are, however, generally small and are often outliers of forests of which the main block is reserved, so that the result is seldom complete removal of the forest in any region.

The Buganda Government continued its programme of forming quick-growing plantations in rural areas. By planting another 94 acres it brought the total of these plantations to 532 acres. So far, planting of this nature by private landowners has been mostly concentrated in the region around Kampala.

ANIMAL HUSBANDRY

Integration of cattle-keeping with crop production became more popular. The high prices for coffee and plantains and the recognised improvements in both crops brought about by applications of manure encouraged farmers to keep small breeding herds in the intensively cropped areas. At the same time, only that number of cattle can be kept at the homesteads for which grazing is available, and unproductive animals are best banished to the extensive grazing of the north. Efforts to improve

grazing were slight. The Veterinary Department reports twenty farmers fenced parts of their farms and tried to improve the grazing. Most stock-keepers in the intensive areas fed cut elephant grass to immature cattle and many gave supplements of crop residues and starch crop surpluses to mature stock. Tethering was done in some parts of Kyagwe County. Repatriation of cattle from Lango to Buruli County continued, and the head of cattle in the county is over 13,000 compared with 800 two years ago. There were large importations of breeding cattle into Buganda. Masaka District alone imported 1,490 Nkedi cows for breeding.

At Kamenyamigo Farm the policy of developing a herd of working cattle continued. A polled bull was bought from Ankole. The manure produced by the 45 head of cattle was applied to coffee and bananas. Feeding was difficult during the year because the grazing suffered from the drought. Sweet potato tops were freely supplied, and with sweet potatoes, maize and dried cassava all cattle were kept in fair condition. Great difficulty was met in trying to buy female polled stock of the right conformation.

The Bukalasa herd was reduced by culling from 62 to 46. The system of management was changed in 1952, the cows being milked once only in the morning and the calves being separated from their mothers at night and allowed to run with them all day. In spite of the change to once-a-day milking, a slightly higher yield was obtained than in 1952 although it was still very poor. The milking herd is now maintained entirely on the central farm. A flock of 30 sheep is herded with the cattle. Thirteen ewes produced ten lambs during the year. A flock of 51 poultry was kept at Bukalasa and 1,100 eggs were sold for hatching. Demand exceeded supply. Two gilts and a boar were kept for educational purposes. At Kakumiro Farm a start was made with establishing a small herd. A kraal was built, a paddock fenced and three head of cattle bought.

PASTURE WORK

Very few Africans have attempted to develop planted or improved pastures. A little *Chloris gayana* seed has been taken by a few men, but grass is not yet recognised as a rotation crop. At Kamenyamigo and Bukalasa farms *Chloris* leys were utilised for grazing, and permanent paddocks were maintained at Bukalasa. Much work is necessary on pastures and pasture management in Buganda.

IRRIGATION

There is no irrigation except for small individual use of spring supplies for vegetable growing.

AGRICULTURAL EDUCATION AND EXTENSION WORK

The following numbers of persons completed formal courses at Bukalasa: —

Apprentices	...	...	15
Chiefs	...	...	7
Prison Warders	...	...	25
Schoolteachers	...	...	31
Teacher Training Centre			
Staff	...	...	19
Cultivators	...	...	410
Total			507

Day-visits were arranged for others to a total of 173.

A short course was held for progressive farmers of Masaka District at Kamenyamigo Farm to demonstrate the value of mixed farming. Talks were given to co-operative societies, growers' groups and schools. Competitions for agricultural betterment formed a main part of extension work. Soil conservation, use of manure, good crop husbandry, better preparation of crops for sale, destruction of banana weevils and adequate famine reserve food planting, were all included in the competitions in Mengo District between the gombololas of each county. Competition was keen and was stimulated by the kind assistance of senior members of the Empire Cotton Growing Corporation, Makerere University College, and the Agricultural Department who performed the final judging. Presentations of challenge shields were carried out by senior Government officials and by the Ministers of the Buganda Government. After the presentations there are sports, processions, feasting and cinema shows, and great merry-making after a year of hard work.

In Mubende District there was the usual district agricultural competition, including all eighteen gombololas, and also a contest between co-operative societies. In Masaka there were annual soil conservation competitions, the trophies being the Kabaka's Shield for the best gombolola, the Buganda Government Cup for the best cultivator's group, and cash prizes for the best individual cultivators.

During these competitions very high standards of cultivation and soil conservation were shown by the winning gombolola, and by certain individuals.

Throughout the year touring field staff of the department visited, discussed, advised and lectured as widely as possible. Gaining the confidence of, and concentration on, progressive farmers was a particularly fruitful method of getting new and better methods adopted. Newsletters on agricultural topics were distributed monthly to the chiefs, and the aid of the Agricultural Adviser to the Mengo Lukiko was always willingly

given when . was wished to acquaint chiefs with policy or measures it was desired to introduce. Films, community development weeks and shows, all aided in driving home various agricultural lessons.

LIAISON AND CO-OPERATION WITH THE BUGANDA GOVERNMENT

The Agricultural Adviser to the Mengo Lukiko continued to further the work of the department by every means open to him. The Ministers and he gave much help with the annual agricultural competitions, in increasing food planting, in encouraging early cotton planting, and in distributing disease resistant cassavas. The Buganda Government votes considerable sums for agricultural purposes such as coffee nursery upkeep, transport of compost, visits to places of agricultural interest, and transport of cassava cuttings. The relations between the Buganda Government and the department are very close, and many projects are joint affairs. In almost every aspect of extension work progress is slow unless the programme is supported by the chiefs. That it is so supported is proven by the energetic and successful way in which communal soil conservation has been developed by the chiefs, and their councils. There are unco-operative individuals, but the enlightened greatly predominate.

PESTS AND DISEASES

Polysora rust on maize was not serious, as had been feared. Panama disease of bananas was found in many places in Mubende, Masaka and Mengo districts. The damage done by it was very much bound up with damage by weevils, and their relative importance could not be separated. Banana weevil was certainly very prevalent and responsible for much loss of crop. *Lygus* on cotton was very severe in parts of Bulemezi and Singo counties. The cotton seed issued for planting in Kyadondo, North Kyagwe and Buruli was dressed with Perenox against blackarm. More than half Bulemezi seed was also dressed. The western part of the Mengo/Entebbe zone received seed from the crop which was planted with dressed seed in 1952 and therefore was presumed to have a lower blackarm infection. Potato blight, rosette disease of groundnuts and cassava mosaic were all present but not in abnormal severity. During the very dry weather in Masaka all the resistant varieties of cassava, except No. 11, F279, succumbed to some extent to the disease. The demand for resistant cassava cuttings was very large, partly due to the food shortage in the second quarter of the year when most of the crop was lifted. North Kyagwe, Bugerere and south Mawokota are now well on the way to being cleared of mosaic disease. All county, gombolola and muluka headquarters in south and east Mengo now have increase plots, but these are still insufficient. There are also increase plots at all coffee nurseries and most cotton variety trial centres. Kawanda Experiment Station and minor experiment stations supply large amounts of clean planting material. Good progress is being made in replacing the old susceptible types; for instance, it is estimated that two-thirds of all the cassava in Mubende

District is the resistant material, but the disciplined and complete supplanting of old by new, which has been achieved elsewhere in the Protectorate, is very difficult to accomplish in Buganda.

The leaf curl virus was epidemic on tobacco in Muibende District.

EXPERIMENT STATIONS

Only one strip of about two acres remains to be cleared on the Costings Farm at Bukalasa. Full rotations were planted on all three of the blocks. The Cedrella avenues were uprooted and this helped in clearing the adjoining strips. The cotton variety planted was BP52 NC52/2 for seed increase for Kawanda Research Station. Prospects were that the crop would be good. The Continuous Cultivation Experiment on Block "E" and Coffee Shade Observation Plot on Block N1 were maintained, and the District Cotton Variety Trial was planted as usual. The yields of the Robusta Coffee Shade and Ground Treatment Experiment on Block N2 were analysed. Briefly, the most important findings were that manuring with cotton seed increased yields, shade depressed yields, but shelter had a beneficial effect. Over the fifteen-year period this coffee, which was not especially well maintained, averaged 15 cwt. of clean coffee to the acre per year, which is far higher than the general level of production in Uganda. An area of 20 acres was cleared and planted with cotton preparatory to initiating a large-scale fertiliser trial.

The herd of 62 cattle was reduced to 46, of which 13 were bullocks. The management of the milking herd was continued according to the system introduced in 1952, namely, milking was done in the morning only, calves were separated from the cows at night and ran with them all day. Even with once-daily milking yields increased a little. The calves benefited from the change. The milking herd was grazed on the grass leys and supplementary feed grown on the farm was given to the milking cows and working bullocks, and the calves were given cut elephant grass. The Kamenyamigo Farm in Masaka has established a herd of 29 working oxen with which the entire draught of the farm is done. The herd was given supplementary food, as far as possible produced on the farm. The buildings were almost completed in 1953. Nineteen acres of ley grazing were in use. A start was made in planting bananas, which are to be one of the sources of revenue of the farm, and one and a half acres of heavily manured banana garden was established. Four and a quarter acres of land was cleared and stumped and this will be cleared of couch grass and planted with coffee. A further six acres of land was cleared for coffee. Five acres of old coffee were maintained and part was manured with cattle manure. One acre of eucalyptus was planted in the swamp. At Buwunga in Masaka, cotton planted on bare plots was almost completely destroyed by a combination of drought, "Lunyu" soil and crickets. Cotton on mulched plots was attacked by crickets but by no means exterminated. Tobacco seed increase was done at Kakumiro Farm, simple trials were planted with local castor seed varieties, and a start was made to establish a

small herd of cattle. Cotton variety trials were planted at all the usual nine centres throughout Buganda. Mukono and Namyoyo plant introduction centres were maintained and developed.

Section II—Food Crops

The year started with the knowledge that food would be scarce before the new harvests were reaped because poor planting weather in 1952 prevented food crop acreages reaching normal. The first quarter of 1953 was unusually hot and dry and banana gardens and sweet potatoes suffered severely. There was no really acute shortage of food outside townships, except in Masaka District. Prices rose to very high levels and there was a much greater than normal consumption of maize meal, which was expensive. It was touch and go whether there would be real famine in parts of Masaka District, and supplies of maize meal had to be sold through retail channels everywhere, particularly in townships. The people were badly frightened, and when a food planting campaign was launched with the onset of the rains there was a remarkable response. An enormous acreage of beans and maize was planted, and sweet potatoes and cassava planting was also on a very generous scale. The results of the campaign for more food planting were most satisfactory and supplies of food were back to normal by the autumn. In addition, a gigantic crop of about a million bags of maize was sold and established acreages of other foods gave confidence that the food scarcity of 1953 would not be repeated in 1954. Investigational work on food crops was confined to attempts to establish weevil-free banana gardens at Bukalasa and Kamenyamigo Farm, manuring bananas at all farms and successful multiplication of the Engenyi variety of finger millet at Kakumiro Farm.

Section III—Economic Crops

COTTON

(a) 1952–53 *Crop*.—The acreage of cotton planted was 341,657 acres and sales were 61,023 tons of seed cotton equivalent to 102,396 bales, giving a mean yield per acre of approximately 400 lbs. seed cotton. Planting was hindered by dry weather; a normal acreage could not be planted and a larger than normal fraction was late. The seed issued in the southwestern counties of Mengo was treated with Perenox against blackarm disease. Dry weather in December and in January ripened the cotton rapidly. Buying started on 19th January in the Mengo/Entebbe and Mubende zones and on 9th February in the Masaka zone. "Fifi" buying began on 19th March in all zones, and the season closed on 29th March in the Mengo/Entebbe zone and on 10th April in the other two zones. The grade was fairly good, except in Bugerere County where buyers were not strict enough nor growers willing to sort their cotton. Bugerere produced a very large crop, and the absence of a bridge over the Sezibwa necessitated transporting some seventy lakhs of cotton by the Mabira Forest road. One Kampala ginnery bought exclusively in Bugerere to relieve the congestion there. It was necessary under the provisions of the

1952 Cotton Ordinance to transport large quantities of cotton to be ginned at ginneries in the west which were unable to obtain their quotas nearby. Prices paid to growers were the same as in 1952, namely, 50 cents per pound for clean cotton and 17 cents per pound for stained cotton.

(b) 1953/54 *Crop*.—The acreage, of which an unusually large proportion was early planted, amounted to 398,074. But for exceptionally poor rains in August this figure would have been larger. June was a wetter month than normal, except in Masaka District, and planting was able to begin under excellent conditions. Planting was in two parts, an early fraction and a late part inter-planted in the enormous maize crop. The dressing plant at Nakawa was able to dress enough seed with Perenox for planting in Kyadondo, North Kyagwe and Buruli counties and also to provide more than half Bulemezi County's requirement. In the south-west of the Mengo/Entebbe zone the seed issued came from the crop which had been grown from dressed seed the previous season. It was hoped some degree of residual control of blackarm disease would remain. A blackarm resistant strain of BP52 was planted in Mubende District. Wet weather up to the end of the year in south-east Mengo and in south Bugerere gave promise of a larger than usual amount of stained cotton, and in Masaka and west Mengo drought inhibited the growth of the crop. Prospects at the end of the year indicated a crop of about 135,000 bales for the whole province.

COFFEE

The total quantity of coffee inspected for export was 26,998 tons compared with 29,563 in 1952. Dry weather during the early flowering period reduced expectations of high production, and long drought later made the crop small and of poor quality in Masaka District. The price of Robusta Kiboko was raised from 70 cents to Sh. 1 per pound in June and growers received handsome sums from the sale of this crop. The best growers were able to earn a net return of over £100 per acre, although the average was much less than this. Coffee farmers were active in rehabilitating neglected coffee and there was a scramble to collect every cherry that grew. Quality suffered from insufficient care in picking but there was improvement in drying methods as little coffee was to be seen drying on the bare ground. Further, large growers installed pulping equipment to deal with peak harvesting.

Co-operative selling increased, and one co-operative society built a curing factory near Masaka in which it processed members' parchment. Proposals for reorganisation of the industry were published and included erection of four more curing works in Mengo, making eight in all, and two more in Masaka, making four there. Provision was also made for existing rough hulleries to be allotted quotas, and for genuine estates belonging to any race to be eligible for estate factories to treat their own or other permitted cherry. The buying season was interrupted during the slack season to prepare for the introduction of the new legislation.

Applications for permission to erect new curing works were received from a number of African individuals and concerns. A start was made with selecting new district buying centres. For the first time coffee became very much the most valuable economic crop in Buganda. Although many growers apply such manure as they can get, and manage their estates well, there are still far too many who neglect their coffee shamefully, to such an extent that yields are very much lower than they ought to be.

TOBACCO

Five gombololas in Mubende District with lighter soils grew air-cured tobacco and ten gombololas grew fire-cured tobacco. The variety was Heavy Western throughout. There was less interest in tobacco than in the previous year, the number of growers being 3,244 compared with 4,785, and the acreage 823 compared with 1,322. Many farmers find the return from tobacco to be unrewarding in consideration of the unremitting attention and large labour input necessary. The crop was attacked by eelworm and by a very heavy epidemic of leaf curl, both of which reduced yields. Production statistics were as follows:—

		Grade 1 Leaf <i>lb.</i>	Grade 2 Leaf <i>lb.</i>	Total Sales <i>lb.</i>
Fire-cured	..	240,320	55,661	295,981
Air-cured	..	38,745	11,499	50,244
			Total ..	346,225

The total value to growers was £12,004.

The average cash return per grower was Shs. 74.

The mean acreage per grower was 0.25 acres.

The mean yields of leaf per acre were:—

Fire-cured	...	...	462 lbs.
Air-cured	...	...	275 lbs.

Percentages of Grade I leaf were:—

Fire-cured	...	...	81%
Air-cured	...	...	77%

Prices were 74 cents per pound for Grade I leaf.

50 cents per pound for Grade II leaf.

Weather was dry during marketing and the leaf was sold in good condition.

GROUNDNUTS

The recorded total sales of 146 tons of shelled groundnuts bears no relation to production, nor is it even a true record of the surplus sold as many primary buyers did not submit returns or disclose complete pur-

chases. The estimated acreage of 76,714 probably yielded 25,000 tons of shelled nuts but most of these were eaten by the growers themselves. It is certain that more than 146 tons were sold but it is not known how much. The price was in the region of 26 cents per pound to the grower for shelled nuts early in the year, but it rose to 42 to 45 cents when export became unrestricted.

CASTOR SEED

With yields in the region of two pounds of seed per plant, 400 plants per acre, and prices as high as Sh. 1 per pound, this crop gave little trouble and a lot of profit to farmers. The main producing areas were Ssingi County, Mubende District, Masaka District and west Mengo. As a rule, complete plots were not planted but small patches or boundary lines were sown with it. Farmers know other crops fare badly under castor and it is rarely interplanted. Exports were 9,392 tons from Mubende and Mengo districts and 3,720 tons from Masaka District. The price fell during the year to as low as 25 cents per pound and fluctuated a lot. It is estimated that total cash receipts of growers were over half a million pounds from this crop.

ORDINARY BEANS

Owing to the food scarcity early in the year and to the fact that beans mature quickly, a very large acreage was sown. Farmers sold some of the crop to provide funds to buy other foods. Total recorded sales, which are incomplete, amounted to 2,836 tons of seed. This was certainly less than the actual figure. The acreage planted was estimated at 230,000, which was almost double the normal, and production was probably 60,000 tons. Most was eaten by the people, but labour employers' needs were satisfied and export was unrestricted.

MAIZE

In the hope of repeating the lucrative return they enjoyed in 1952, and in the absence of any equally suitable alternative for early planting, farmers sowed the enormous area of 236,000 acres with early maize. Although consumption green was high because of the food shortage, there still remained approximately one million bags of surplus for sale. Primary buying licences were issued to all having suitable stores and all primary buyings were at the disposal of the Commissioner for Commerce. The magnitude of the crop was unforeseen and this disposal presented a most perplexing problem. Primary storage became congested, the conditioning plant's capacity was greatly exceeded and as much unconditioned maize as possible was put into immediate use or exported to other East African territories. The prices paid were fifteen cents per pound to growers in Masaka and Mubende districts, and a sliding scale based on moisture content in Mengo. The sliding scale resulted in prices from 12 to 14 cents being offered to growers. Whilst it is true that many growers planted in the hope of a repetition of the high prices obtaining in 1952,

it seems that Shs. 25 to Shs. 30 a bag is regarded as remunerative by many African farmers and at least as attractive as the return obtainable from alternatives.

SOYA BEANS

Masaka District was again the main source of soya beans. Sales were 342 tons from twelve hundred acres. The crop is not very popular. Prices were about 25 cents per pound to growers.

CHILLIES

Chillies have reverted to the position of a minor cash crop. The acreage was estimated to be only 154, but this is too low as most of the production comes from a few odd plants included in banana gardens and elsewhere and which cannot readily be included in formal acreage estimations. Sales were 203 tons and the price was 50 cents a pound. Masaka District was the main source.

ANNUAL REPORT—EASTERN PROVINCE

By D. F. STEWART, *Assistant Director of Agriculture (Field)*

Section I—General Review

WEATHER

Gone seem to be the days when rainfall followed some sort of pattern throughout the year. In recent times no one year's rainfall seems to have borne any relationship with another. 1953 was no exception. The extremely hot and dry weather, which started in October, 1952, continued until mid-April, 1953, when spasmodic and localised rain fell. It was not until June that suitable and safe planting conditions were forthcoming. These continued until the end of August when an unfortunate dry spell of about six weeks set in. Thereafter, i.e., from mid-October till the end of the year, rainfall was good, December being particularly wet. The total rainfall figures, however, were well below average.

AFRICAN AGRICULTURE

Spring food crops, particularly finger millet, were established with difficulty and were extremely late. Yields were inevitably low.

The late rains, however, luckily benefited the autumn planted crops with resultant good yields. As important, if not more so, was the fact that root crops, which were mostly planted late, prospered with these rains and at the end of the year both sweet potatoes and cassava had shown good healthy growth. This was particularly important as very few reserves remained in the ground.

As regards cotton, favourable conditions in June resulted in a large acreage being early planted. The September to October dry spell was a

check on growth and adversely affected the crop in the lighter soils. The late good rains were naturally beneficial to growth and record crops are expected in Mbale and Busoga.

Plantain gardens, never particularly well tended in any area, deteriorated over the 1952/53 dry spell and it was only towards the end of 1953 that matoke was reasonably plentiful.

The province produced a record maize crop but, although the groundnut acreage tends to increase, sales are decreasing yearly.

In Bugishu, Arabica coffee pruning procedure was successfully revised and despite an extremely severe attack of thrips in the low and medium levels, a crop of some 3,000 tons parchment is expected. Co-operative societies prospered and will be responsible for the production of some 85% of the crop. Primary marketing was handed over to the unions.

Advantage was taken of the food shortage and prices of maize meal were exorbitant until Government controlled produce was issued (8,070 bags) thereby reducing the price from Sh. 1 per lb. in some areas to a maximum of 34 cents.

Some progress in soil conservation was made in Teso and Mbale but Busoga was, as usual, extremely backward. During the year, more serious consideration was given to the legal aspect in the form of African Local Government bye-laws.

Cotton seed dressing was done in Teso for the third year and in the whole of Mbale for the first time (south Mbale only being done in 1952). The N17 variety in Busoga, which was extremely impure, was successfully replaced by S47 from Mbale.

Little interest was shown in the limited extension mechanical cultivation services from the two centres of Serere and Busoga Farms.

The annual "Kitongole" competitions continued to prove successful, particularly in Teso and Busoga, while in Mbale the standard was rather lower.

As a general summary to this section it can be stated that all agricultural aspects of the District Plans were carried out satisfactorily, and that the African cultivator continued to enjoy high prices for all types of produce. All in all, he is to be congratulated on his response to the various campaigns and there is no doubt that, generally speaking, he took advantage of the extremely tricky planting conditions, being well aware of the precarious position in which he might well find himself in early 1954. He is to be congratulated particularly on his acreage of root crops in an effort to make good his depleted finger millet reserves.

NON-AFRICAN AGRICULTURE

Conditions were unfavourable for sugar and jaggery production; likewise for coffee in Busoga.

AGRICULTURAL INDUSTRIES

Ginneries.—Two more ginneries were acquired on behalf of co-operative unions, making four in all:—

Mbale—Lukonge and Tororo.

Busoga—Namwendwa and Nabivumbi.

At the ginneries acquired last year, auctions of the ginnery and moveable assets were held, leaving stores only for buying purposes.

Ginneries continued to change hands at puzzlingly high prices. The two remaining European firms in the segregated area of Teso District, Messrs. East African Ginners and Messrs. Foster Brothers, sold during the year to Asian firms.

Oil Mills.—In the province 14 mills operated—Teso 3, Busoga 5 and Mbale 6.

Maize Mills.—As far as is known, only two more maize mills were erected although others were recommended.

Towards the end of the year the erection of both oil and maize mills was decontrolled, and it is expected that next year there will be a considerable increase in both types of mills.

MARKETING

Cotton.—The crop was marketed for the first time under the 1952 Cotton Ordinance and Rules. Weather conditions were conducive to a short and rushed marketing season with the inevitable resultant congestion at many buying centres. Many ginners did not fully understand the quota system and this led, in some cases, to abrupt cessation of buying, thereby causing inconvenience to growers.

Maize, Groundnuts and Simsim.—These crops were marketed under the Produce Marketing Ordinance, 1953, and there was considerable relaxation of control, particularly in respect of the issue of buying permits.

Coffee.—

(a) *Arabica.*—In Bugishu all primary marketing activities of the Arabica crop were undertaken by the co-operative unions, whilst the Bugishu Coffee Scheme continued to control sales.

(b) *Robusta.*—The Coffee Industry Ordinance and the Coffee (Export Duty) Ordinance were published on 1st September, 1953. The former has little application in this province as the Bugishu coffee industry is organised under separate legislation and the quantity of Robusta produced is negligible.

SOIL CONSERVATION

(a) *Prevention of Soil Erosion.*—Teso maintained its high efficiency in strip cropping and the major activity was directed towards realigning and widening the grass strips. Steady progress was made in the bunding

of paths with a new, flat, wide bund diagonally across the path and with soak pits at each end. Without decreasing efficiency, transport by bicycle and car is easier than across the former higher bunds at right-angles to the path.

In Mbale strip cropping progress was reasonable. Paspalum grass was distributed in fairly large quantities, particularly in south Bugishu, after demonstrations including the film "The Story of Sayi".

The Busoga District Council passed some badly required bye-laws on soil erosion. In spite of opposition, protection of compounds by paspalum made some progress, but hillsides, particularly in the more newly opened areas in south-west Busoga, were badly exploited.

In all areas the "Kitongole" competition continued to act as a stimulus and demonstrations continued at such places as prison farms, school gardens and other special areas.

The District Councils in the more important and heavily stocked cattle areas controlled the closing and subsequent opening of over-grazed areas with a real appreciation of the position, particularly in Teso.

(b) *Maintenance of Fertility*.—Except in areas of over-population, the 3:3 rotation was encouraged. This is not possible in most of Bugishu and some parts of Busoga where, by the nature of the soil, it is obviously possible to increase the cultivated/resting ratio. On the Teso light soils, on the other hand, another remedy must be found and Government encouragement is being given to an organised resettlement scheme in Amuria County from the overcrowded areas of Kumi, Ngora and Bukedea.

The application of manure to arable land has made no progress. The ox-carts in Teso have proved unsatisfactory for the heavy work demanded and other types are being investigated.

ANIMAL HUSBANDRY

Animal populations in thousands were:—

District	Cattle			Sheep			Goats		
	1951	1952	1953	1951	1952	1953	1951	1952	1953
Mbale ..	348	360	360	82	80	103	208	213	248
Teso ..	636	636	617	30	30	35	201	201	233
Busoga ..	107	117	128	31	36	36	290	292	304
TOTALS ..	996	1,091	1,105	143	146	174	699	706	785

In Busoga the population is not yet excessive but in Teso and Mbale destocking campaigns are promising. In the former district, arrangements

were improved for onward transmission of stock to Busoga and Buganda and sales increased. Total Teso exports were:—

Cattle	31,597
Sheep	687
Goats	22,850

In Busoga sales increased with prices lower than in 1952. These were:—

	1952	1953
	<i>Shs.</i>	<i>Shs.</i>
Cattle	356	284
Sheep	32	40
Goats	40	33

The prison farm herds continued to be run on better than average lines with resultant all-round benefits.

PASTURE WORK

Major pasture work was done at Serere and the officer-in-charge has written up three experiments for publication in due course.

IRRIGATION

Apart from small acreages in Bugishu no irrigation was practised.

District Teams have been asked to investigate the possibilities of swamp drainage-cum-irrigation.

EDUCATION

Courses

(a) *Serere*.—A total of 589 persons attended the various Serere courses, all of which were undertaken by the Serere staff except for the Makerere Students' Course under the direction of the Makerere Tutor and the Chiefs' Training Course directed by an administrative officer. The courses included apprentice assistant instructors, learners, chiefs and cultivators, staff teachers, prison warders, farm headmen, assistant instructors (refresher), assistant agricultural officers (refresher) and variety trial observers (refresher). In addition, there was one animal husbandry course held at the request of the Veterinary Officer.

(b) *District*.—The District Teachers' Courses started last year were repeated successfully in each district.

In Busoga, a party of Councillors led by the Secretary for Agriculture and Forestry visited Kigezi. It is significant that soon afterwards the Council passed long overdue agricultural bye-laws. Such visits are to be encouraged. At the African Local Government Headquarters in Busoga an administrative officer, seconded to the Department of Community Development, held two courses for chiefs at which this department

assisted by lectures and arranging visits. One such similar course was held in Teso. Arrangements were made for parties, including school children, to visit winning "Kitongole" and prison farms.

In Mbale the Agriculture and Co-operative School was opened at Bududa and courses were organised by both departments.

PESTS AND DISEASES

Locusts.—No swarms were reported in the province although stray specimens were found.

Cotton

(a) *Lygus*.—The Teso, Mbale and north Busoga crops probably suffered more from *Lygus* than was originally thought. The mature plants were leggy with widely spaced branches carrying little or no bottom crop. It is significant that these are the finger millet areas and that finger millet was generally late planted.

(b) *Blackarm*.—The annual survey is summarised below and clearly demonstrates the importance of seed dressing.

Zone	Number of seasons with dressed seed	Mean percentage of population infected
Segregated Areas ..	4	3.3
Usuku, N. & S. Teso ..	3	5.1
South Mbale ..	2	8.3
North Mbale ..	1	15.1
Busoga	0	42.5

(c) *Wilt*.—Was slight only in all districts.

Coffee (Arabica)

(a) *Antestia*.—This pest continued to spread in Bugishu, being most serious in two gombololas of north Bugishu where growers have obtained little crop for two to three years.

Under the direction of the Senior Entomologist various insecticides and methods of application were tried and for 1954 it has been recommended that growers themselves, organised by miruka, apply pyrethrum dust by hand pumps, both supplied free and financed by the Bugishu Coffee Scheme, as an experiment. Preliminary indications are that it may be necessary to reorganise by co-operative unions and paid labour.

(b) *Lacewing Bug*.—This insect, too, is causing some concern by its spread in south Bugishu.

(c) *Thrips*.—During the dry spell of 1952/53, the worst-ever attack of thrips caused considerable damage in the low and medium level coffee, in many cases causing complete defoliation and in a few cases death. It is estimated that the loss in production was in the region of 200 to 400 tons of parchment coffee.

Cassava.—The dry weather and the consumption of most cassava planted had two opposite effects, depending on previous progress. Teso, which was comparatively free from mosaic, increased the non-mosaic resistant varieties probably through importation of cuttings from elsewhere. In Busoga and in Mbale (in that order) where mosaic had been extremely common, a heavy demand was made on mosaic resistant varieties at departmental distribution centres with a resultant general improvement.

Finger Millet.—In Teso the late planted crop was further adversely affected by an attack of a small leaf roller-type of caterpillar. In most cases the crop grew away from the damage.

Groundnuts.—In most areas, probably because of poor stands, Rosette disease was more prevalent.

Plantains.—Weevil damage continued to take heavy toll, particularly in Busoga where attention to "Nsuku" was practically non-existent. No Panama disease was reported. The Agricultural Officer and Field Officer, Mbale, visited Ankole to see this disease on the spot.

Maize.—There was less rust than in 1952.

EXTENSION WORK

School Gardens.—Staff continued to visit school gardens and give advice. They also helped to judge the school garden competitions, the standard of which was generally high.

Shows.—County shows continued to play an important part in the province's activities. In Busoga the organisation was in the hands of the Saza Teams (which lacked the enthusiasm of last year) whilst in Mbale and Busoga an Executive Officer was appointed from the District Teams.

The following were held:—

Teso.—Serere and Kumi.

Busoga.—Kaliro, Kaiti, Kiyunga and Kamuli.

Mbale.—Kapchorwa (for the first time), Butaleja and Kamuge (Saza Team).

Competitions.—Considerable time was spent by both African and European staff on these projects. The standard within the competing "Bitongole" continued to rise, but unfortunately there was little response in the neighbouring or other areas in copying the improvements demonstrated.

In Teso the scheme was widened by the introduction of a district competition, the winner being selected from the eight winning county firsts.

Propaganda.—General and specially directed propaganda were continued by all means possible including contributions to the vernacular press and pamphlets on special subjects such as the introduction of the

new cotton seed S47 into Busoga, the introduction of dressed cotton seed in North Mbale and special food and cotton planting campaigns. All District Teams now have cine-cameras and all Agricultural Officers have taken a keen and active interest in this new and popular type of propaganda.

Cassava Extension Schemes.—In Teso the main work was general roguing. In Mbale the scheme now includes the following gombololas or parts of the gombolola: Gogonya, Agule, Kasodo, Puti-Puti, Pallisa, Butaleja, Budaka, Kwapa, Buteba, Kakoro, Kachonge, Mazimasa, Busolwe and Bulangira. In Busoga progress was slow.

Prison Farms.—Agricultural staff maintained a keen interest in all prison farms, which, with few exceptions, were well looked after. The Serere courses for warders and farm headmen have undoubtedly helped in this respect. In Teso, Kumi won the competition for the second year in succession.

Sunflower was introduced to most farms and vegetables of various kinds were introduced, maintained or extended. Wherever cattle are present they are well managed.

Land Blocking.—Further but less spectacular progress was made in 1953. The idea has spread from Serere County to Kumi, Bukedea and Kaberamaido counties, where a few blocks were marked out. It is reported that considerable suspicion has now arisen over the scheme, people fearing that either the blocked land or that remaining will be acquired. There is also opposition to any form of fencing or hedging. In spite of this, requests exceeded the capabilities of marking-out staff and it is always emphasised that marking is done only on request.

Mechanical Cultivation.—In Busoga during the first half of the year a limited acreage was cultivated from Busoga Farms; in the second half by a private contractor with tractors on loan. Neither system was successful and no acreages are available. In Teso, the scheme operated from Serere was likewise a partial failure as regards acreages treated. A three-year record is as follows:—

	1951	1952	1953
Acres ploughed	270	174	135
Acres 2nd ploughed or disc tilled	281	152	52
	451	320	187

There is therefore a gradual decrease from what never was a spectacular acreage. As ox-ploughing is well established in Teso and more ox-drawn implements are being investigated, policy will be not to press tractor work but to operate on request only. Ploughs and ploughing oxen are recorded as 44,593 and 112,583 respectively.

Pigire Livestock Scheme.—The scheme is static but the area produced many prize-winning cattle and hides at the Serere show.

AGRICULTURAL LEGISLATION (AFRICAN)

The outstanding event was the passing of agricultural bye-laws by the Busoga Council towards the end of the year. In Bukedi and Bugishu existing laws were brought up to date and others proposed in the light of experience. It is hoped they will be passed early in 1954. In Teso there is only one bye-law on cassava, other aspects being dealt with by Council resolutions. In all areas it is intended to have many reprints of these consolidated laws and resolutions issued for the guidance of chiefs and agricultural staff. Instructions on their judicious use have been given as well as suggestions for monthly returns of cases taken.

EXPERIMENTAL

The stations at Bugusege, Bududa and Bukwa were maintained in addition to the 13 cotton variety trial centres. Six coffee variety trials were established in Bugishu.

LIAISON WITH AFRICAN LOCAL GOVERNMENTS

Cordial relations were maintained with African Local Governments and, despite their many and varied duties, African Local Government officials have co-operated to the best of their ability. They were particularly helpful in the food planting campaign.

Without the co-operation and help of African Local Government official, particularly miruka chiefs, who are in close contact with the cultivator, the work and advice of this department cannot prosper. It is significant that where a chief is interested, agriculture generally progresses. The monthly newsletter to chiefs is appreciated.

CO-OPERATIVE SOCIETIES

With the rapid advance of the co-operative movement, policy will be directed to the utilisation of these societies as channels of agricultural propaganda. This has already been started in coffee work in Bugishu where more responsibility has been delegated to societies in the form of marketing, pruning and nurseries. It is in the interests of all societies, most of which are primarily marketing societies, to improve cultural methods in order to obtain more produce per unit area to market.

Mbale and Busoga each had two Co-operative Officers whilst Teso in 1953 had one for the first time.

Mbale societies deal in coffee, maize and cotton; Busoga with cotton and maize, and Teso mainly with cotton.

In Bugishu during the 1952/53 season 67 per cent. of the crop was produced by society members compared to 44 per cent. in 1951/52, 29 per cent. in 1950/51 and an anticipated figure of 85 per cent. during the 1953/54 season.

Section II—Food Crops

GENERAL

Despite the low rainfalls, with an unfortunate distribution, plantings of all crops were satisfactory. This was very necessary as most reserves, both in store and in the ground, had been consumed by about August. Luckily, autumn planted yields were above average and the shortage in early 1954, anticipated about October, may not now materialise. In any event, maize in ample quantities, at a reasonable price, will be available.

FINGER MILLET

All districts, notably Busoga, increased their acreages over those of 1952. The provincial increase was from 572,251 acres to 721,973 acres, i.e., an increase of approximately 150,000 acres or 25 per cent. This includes some planted in the autumn in Bukedi. Unfortunately, because of late planting, yields were low and the harvest will mainly suffice for immediate requirements only, with little building-up of depleted reserves.

Possibly because of the dry weather, the incidence of *Eleusine indica* sps. was higher than in previous years.

BEANS

In Teso the term bean includes cow-pea, the autumn crop traditionally following finger-millet. Owing to the dry September and early October, crop yields were very low. The lack of interest in Busoga (especially south) is not understood and the acreage is steadily decreasing. The crop is well-liked but grown only in small quantities. The Mbale (mainly Bugishu) acreage, on the other hand, shows a steady increase and the provincial total remained fairly constant at about 160,000 acres.

PLANTAINS

Plantain gardens, never well tended, deteriorated noticeably because of the six months dry spell. Yields of matoke were very low and prices soared correspondingly, reaching Shs. 8 to Shs. 10 per bunch in some areas. In Bugishu the crop continued to be a considerable source of income by sales to the plains. Towards the end of the year the crop was more plentiful as a result of the late rains.

SORGHUM

There were slight increases in Teso and Mbale acreages with a corresponding increase in the provincial total from 164,800 acres in 1952 to 172,650 acres in 1953.

SUNFLOWER

This crop was introduced at many cotton variety trial centres and at prison farms, with a view to increasing and distributing seed.

ROOT CROPS

With the precarious food position (i.e., the partial failure of grains and plantains) and the real threat of locusts, every effort was made to

plant root crops, with very satisfactory results. Sweet potato vines were extremely scarce and were not available for planting in quantity till late in the year. Luckily, the late rains benefited both sweet potatoes and cassava and at the end of the year both crops had grown well and should be a valuable source of food (either dried or fresh) in early 1954.

Comparative cassava acreages for the province were:—

1953 acreage	1952 acreage	5-year mean
341,604	253,195	176,150

i.e., an increase of some 88,000 acres (35 per cent.) over the 1952 planting and of 165,000 acres (about 100 per cent.) over the 5-year mean.

There is therefore evidence that the importance of the crop as a reserve food when required is now appreciated. This is particularly so in Busoga and Mbale which approximately doubled their 1952 acreages. Teso appreciated the position a number of years ago.

Considering the scarcity of early vines, sweet potato acreages were very satisfactory, being 198,684 for the province compared with 179,911 in 1952 and a five-year mean of 175,044 acres. Teso and Busoga each increased the 1952 acreage by about 14,000 acres, while there was a slight decrease in Mbale of about 7,000 acres.

Section III—Economic Crops

COTTON

1952/53 Crop.—Marketing opened in Usuku on 1st December, 1952, and in other zones on 5th January, 1953. Weather conditions created a peak buying period of about a month in which most of the cotton had been sold. Marketing arrangements were not altogether satisfactory and in Busoga ginneries were unprepared for the unexpected large crop. Attempts were made, with some success, to prevent contamination of the cotton by sisal and banana fibre.

The total crop in Eastern Province zones (i.e., excluding Kaberamaido of Teso District but in the South Lango zone) of 98,246 tons of seed cotton was the third highest on record and only 699 tons short of the previous season which was the second record. It was composed of 96,824 tons of “safi” and 1,422 tons of “fifi”.

Varieties planted were as follows:—

Busoga	N17 undressed.
Segregated Areas ..	S47 dressed (3 years).
All other Teso Zones ..	S47 dressed (2 years).
South Mbale	S47 undressed.
North Mbale	S47 dressed (1st time).

Prices paid for good raw cotton were Shs. 49 per 100 lbs. in Busoga and South Mbale, Shs. 48/50 in North Mbale and Shs. 48 in all other zones. The price for cotton other than good cotton was the same for all zones at Shs. 17 per 100 lbs.

The acreage planted was 785,272 which was slightly higher than the previous season. The provincial zone yield per acre was 280 lbs. compared with 292 lbs. in the 1951/52 season and an 8-year mean of 245 lbs.

Actual bales ginned as reported by the Pools were: —

Zone	A.R.	B.R.	Total
Busoga	77,796	1,181	78,977
North Mbale	25,236	256	25,492
South Mbale	18,076	217	18,293
Usuku	4,492	72	4,564
North Teso	9,207	38	9,245
South Teso	10,520	135	10,655
Segregated Area	7,273	374	7,647
TOTAL ZONES ..	152,600	2,273	154,873

1953/54 Crop.—Varieties planted were: —

Segregated Areas	S47—delinted and dressed (4th year).
All other Teso Zones	S47—delinted and dressed (3rd year).
South Mbale Zone	S47—undelinted and dressed (2nd year).
North Mbale Zone	S47—undelinted and dressed (1st year).
Busoga Zone	S47—(ex Mbale), undelinted and undressed.

The total acreage of all Eastern Province zones (excluding Kabera-maido of Teso District) was 844,077 acres compared with 785,272 in 1952 and 759,016 in 1951, i.e., increases of some 100,000 and 125,000 acres respectively.

	1952	1953
Per cent. of total planted in May and June ..	26	39
Per cent. of total planted in May, June and July	66	77

There was therefore considerable improvement in early planting.

The late rains in November to December benefited the crop in general and the late plantings in particular. For example, in the newly opened up Nile valley area most of the cotton followed maize and with normal or sub-normal autumn rains would have yielded poorly owing to water deficiency. As it turned out, this cotton is giving very good yields.

To conform with the policy of offering early marketing facilities to early plantings, the season was opened in all zones (including Usuku) on 14th December, 1953.

Although benefiting the quantity of cotton, the late rains had a deleterious effect on grade which was very poor in the early buying days, but improved with constant propaganda and warnings. Generally, grade will in no area reach last year's high standards.

For the first time the price paid for good raw cotton in all zones was the same—Shs. 50 per 100 lbs., with "fifi" remaining as last year at Shs. 17. This uniform price is welcomed and will help to eliminate zone boundary difficulties and general complaints about differentials.

As far as marketing is concerned, the season has been an extraordinary one. After a slow start (but not so slow as to cause cessation of ginning in any area) buyings were maintained at a steady level for the 4th, 5th, 6th, 7th and 8th weeks. Thereafter in Teso sales dropped, in Mbale less so, while in Busoga they were maintained or slightly increased. The early opening has been well justified.

Record crops are expected in Busoga and Mbale despite the fact that at the time of writing premature uprooting is taking place in Busoga, in order to plant early finger millet. There is also the fact that with the record maize and cotton crops, with record high prices, growers are not so urgently in need of cash.

COFFEE

(i) *Arabica (Bugishu)*.—1952/53 purchases were 510 tons Bugishu Coffee Scheme (22 per cent.) and 1,797 tons N.P.P. (78 per cent.)—total 2,307 parchment. (26 tons Lights and 21 tons “Buni” excluded). This was only 104 tons more than in the 1951/52 season, i.e., two consecutive bad years.

350 tons (clean) of scheme and 350 tons (clean) Native were sold to the Ministry of Food, the remainder being auctioned in Nairobi.

The following average prices per cwt. of parchment f.o.r. Mbale, were:—

			1952/53	1951/52
			<i>Shs. cts.</i>	<i>Shs. cts.</i>
B.C.S.	..	..	289 74	306 81
N.P.P.	..	..	358 67	310 74
Lights	..	..	176 55	255 62
Buni	..	..	140 80	158 00

As last year, the high percentage of scheme coffee sold to the Ministry at lower prices than those in auction explain the apparent discrepancy in the prices above. On a buyer's market the difference between Scheme and Native is estimated at Shs. 20 to Shs. 30 per cwt. in favour of Scheme.

Prices paid to growers (including the second payment) were:—

F.A.Q. parchment	..	Shs. 2/45 per lb.
Fifi parchment	..	Shs. 1/80 per lb.
Buni	..	Cts. 70 per lb.
Cherry	..	Cts. 45 per lb.

In late 1952 and early 1953, campaigns were organised to try and improve the field work in Bugishu coffee as it was realised that production was static if not on the downward trend, despite the issue of some million and a half seedlings yearly. Pruning was financed by the B.C.S. and was reorganised. Attention was given to weeding so that despite a very severe attack of thrips, causing a loss of 200 to 400 tons, a crop of 3,000 tons parchment is estimated for the 1953/54 season.

In 1953, 1,647,090 seedlings were sold at 4 cents each (a 100 per cent. increase). The cost of production is 6 cents and the difference was subsidised by the Bugishu Coffee Scheme. In addition 180,367 seedlings were issued free in connection with a scheme for the replacement of uneconomic coffee. Total issued was 1,827,457.

Further improvements can be made in care after planting as the average survival rate in the field was calculated at 70 per cent. only compared with a departmental figure of 95 per cent.

(ii) *Robusta (Busoga)*.—No progress can be reported as only 88,638 seedlings from nine nurseries were sold at 2 cents each in 1953 compared with 280,000 issued free in 1952 and 29.5 tons Kiboko sold compared to 45 tons. A scheme to increase marketing facilities under the new Coffee Ordinance is being investigated. It is estimated that at the end of 1953 the acreage was 1,073, of which 527 acres were planted in the last three years.

MAIZE

For the first time marketing of this crop was under the direction of the Department of Commerce, although agricultural staff spent considerable time on store inspection and the signing of hundreds of buying permits.

The high maize meal prices prompted large acreages, particularly in Busoga where the figure was increased from 42,147 acres in 1952 to 143,501 in 1953 (the mean plot size was much larger), i.e., an increase of 255 per cent. In Mbale the increase was in the order of 50 per cent. from 43,066 acres to 64,618 acres. The Teso acreage remained negligible.

Marketing opened on 10th August and finished at the end of November, except in Sebei where the season was extended till 30th March.

In Busoga, after a slow start, markets became congested and difficulties were experienced in obtaining storage accommodation and in rail-ing the produce. Grade, except to begin with, was fairly good.

No sale figures are available from Mbale but 378,856 bags are reported to have been purchased in Busoga. At the end of June the acreage was 142,546, i.e., 2.4 bags sold per acre planted.

The price was fixed in Mbale at 15 cents per lb. but in Busoga it was on an f.o.r. basis and growers received an average of about 12 to 13 cents, ranging from 10 to 15 cents.

GROUNDNUTS

The opening remarks under maize apply for groundnuts (and simsim). In recent years there has been a tendency to decrease acreages in Busoga but to increase in Mbale and Teso, the overall being an increase.

Provincial totals were:—

1953	1952	8-year mean
235,769	211,391	199,942

Marketing opened on 10th August and ceased in Mbale on 19th September, in Busoga on 20th September and in Teso on 10th October.

For the first time since 1939 all forms of control (except permits to buy) were abolished and prices fluctuated and varied from place to place.

In Busoga, the main selling area, prices opened at about 18 cents per lb. (unshelled nuts) rising to 32 cents in some areas but later dropping to 20 to 25 cents. In Mbale and Teso prices were generally lower. Kernels were abnormally small.

No actual returns are available but it is thought that sales were less than last year (10,036 tons) due possibly to growers retaining for food and seed. The record crop was in 1951 when 16,073 tons of kernels were marketed.

MISCELLANEOUS CROPS

Rice.—The total acreage was 2,388, of which 2,027 were grown in Teso.

Shea Butter Nuts.—Sales increased from 60 tons in 1952 to 254 tons in 1953 at an average price of 15 cents per lb.

Pigeon Peas.—160 tons were sold in Teso, at an average price of 25 cents per lb.

Gram.—In Teso 34 tons were sold at 75 cents per lb.

Sunn Hemp.—Seed was sent from Kakira in an attempt to establish a cash crop in Teso.

ANNUAL REPORT—WESTERN PROVINCE

By R. P. DAVIDSON, *Senior Agricultural Officer*

Section I—General Review

WEATHER

Generally speaking, the rainfall in Ankole followed the normal pattern fairly closely and after the dry season at the beginning of the year there were good rains in March and April which diminished in May. The next three months were hot and dry, with widespread showers during the third week of August. In September the distribution of rainfall was good in the west but rather spasmodic in the eastern part of the district. October was a variable month, but during November rainfall was heavy everywhere, whilst December was the start of another dry season. A very severe hailstorm did serious damage to crops at Rubare Farm on 6th December, and there were several other visitations of a similar nature in Shema and Igara Counties.

Bunyoro had a fortunate year as regards the weather, with abundant rainfall except for a sharp, dry spell in May, and there was practically no hail.

Kigezi had more than the average rainfall for the year, but it was rather unevenly distributed during the first three months. Kamwezi and Bukinda were very dry while in March heavy storms caused landslides at Nyakishenyi and Mishongora. April rainfall was well above average and June also had an abnormally wet period. July was extremely dry and cold, with a temperature of 38°F. at Kabale on the 23rd. Temperatures in the valleys fell to freezing point and signs of frost were evident over an area within a radius of thirty miles centred on Kabale. Swamp plantings of sweet potatoes were blackened and the natural flora, including papyrus, trees, etc., was affected. During the months of August and September the weather was normal for the time of year but a very dry spell prevailed early in October which was broken towards the end of the month. In November rain was general and nearly continuous in most areas, but in December drier and warmer conditions prevailed.

Weather conditions in Toro were extremely variable from county to county, but all the agricultural areas received an adequate well-distributed rainfall during the year and there were no outstanding features except for extremely heavy showers in Bwamba and Burahya counties during February and March. The driest place in Toro was Mweya in the Queen Elizabeth National Park where a total of only 15 inches was recorded.

AFRICAN AGRICULTURE

On the whole, the Western Province was fortunate in receiving sufficient rain to ensure adequate food supplies in spite of a low standard of cultivation, and at the end of the year the food position was reasonably secure except in Kigezi. In that district there has been an increasing awareness of the serious over-population problem and as the year closed resettlement propaganda was at full pressure and plans were being prepared for further resettlement in northern Kigezi. This, however, will touch only the fringe of the problem, since Kigezi itself can only absorb a very small fraction of the one hundred thousand people it is considered necessary to move from the three overpopulated counties of Rukiga, Ndorwa and Bufumbira in the very near future.

In regard to economic crops, the year was a successful one, with the further increase of over 30 per cent. in the Bunyoro tobacco crop and a vastly greater production in maize, although we had rather too much of this in Kigezi. The cotton crop continued to expand in Bunyoro, while marketing difficulties hampered progress in Toro. The Kigezi vegetable scheme dealt with some £5,000 worth of produce. With enhanced prices for coffee, growers showed more enthusiasm for improving their plantations and in all districts coffee nurseries were extended. Soil conservation was kept well in the forefront of departmental activities and with the larger staff there was a considerable increase in extension work, especially as regards agricultural shows. In Bunyoro the group-farming movement gained further impetus with the use of mechanical cultivation. The cultivation of nicotine tobacco was discontinued in Ankole and Kigezi.

The co-operative and group-farming movement in Bunyoro was given impetus by the facilities for mechanical cultivation offered by the Special Development Section. By the end of the year, there were forty-five farming societies, only one of which was registered as a co-operative society. These groups are a valuable influence in improving agriculture in Bunyoro, for the best of them set a fine example to their neighbours by hard work and good farming methods, producing some of the best crops in the district.

NON-AFRICAN AGRICULTURE

In Bunyoro planters made further improvements in the management of coffee estates and more interest was taken in papaya. The fall in price of rubber brought tapping almost to a standstill. At Masindi Port the sisal estate was carried on. There was no production of pyrethrum from the estate at Karengere in Kigezi and, since no endeavour has been made to rehabilitate the estate, notice to quit has been served on the proprietors. It is intended to use some of this worn-out land for experiments in regeneration. In Toro planters maintained their interest in coffee and better management of estates is evident. The main endeavour continued to be the growing of tea, which flourished under favourable weather conditions except for some damage by hail during October.

AGRICULTURAL INDUSTRIES

There was no change in the cotton ginneries in Bunyoro although reconstruction is proposed at Hoima and Masindi town in the near future. In Toro the Kaija ginnery will be dismantled and replaced by a new one at Kasese and this should go far to solving the marketing problems in Busongora.

The flax factory at Kisizi dealt with the small crop between August and October.

No nicotine tobacco was processed at Chigata by Messrs. Kigezi Industries Limited during the year.

A new maize mill came into operation at Hoima and, with the relaxation of control, some further expansion is expected in the gristing capacity of the province.

The two large tea concerns in Toro continued to operate their factories, handling tea grown by neighbouring planters as well as that from their own estates.

SOIL CONSERVATION

The policy of alternate strip cropping, which has been almost the keystone of soil conservation practice in Kigezi and parts of Ankole, has come under a good deal of discussion, and most authorities are agreed that this is a wasteful method of land utilisation except on the steeper slopes where it may be the only practicable method of preventing erosion. It has been found in Kigezi that it is virtually impossible to graze the resting

strips and in many cases these are narrowed down and never actually cultivated so that, in effect, a form of shifting cultivation is practised. Attention is therefore being given to the development of a block layout, with a number of parallel strips of suitable width based on the contour and separated either by three-yard grass washstops or by bunds. On the less gentle slopes, full width grass strips may have to be retained at intervals between the cultivated strips, but, generally, changes in the natural contours will prevent too many strips being laid off side by side. This type of layout has already given good results in Ankole and is now being tried in the undulating country in north Kigezi and in Toro. The effectiveness of *paspalum* bunds, as used in Buganda, is also being investigated and steps have been taken to multiply supplies of this grass in Toro and in other areas where it is likely to do well, especially north Kigezi which is very short of planting material.

In Ankole, besides normal activities, special attention is being given to marking out new land with strips on the contour and additional staff was engaged for the purpose and also to enable the planting of black wattle in contour lines on the hillsides to be pushed ahead. This soil conservation measure has come in for some criticism lately, the suggestion having been made that black wattle trees growing in a row on a steep hillside might actually encourage erosion, and this may certainly be true when thinning at the proper time is neglected and when no precautions against soil wash are taken when the seed is planted. Our future practice will be to plant on back-sloping terraces at least three feet wide and tied where necessary, and the importance of thinning of the trees has been impressed on all concerned. The planting of wattle often has the effect of protecting a hillside from fire, since the trees must be guarded against this when young, and there have been some remarkable examples of regeneration on bare, stony hillsides in south-west Ankole. While this is most desirable, protection must not be overdone because of the danger of *Acacia* species taking command, and there is also the question of grazing to be considered. Another direction in which useful progress has been made is in the closing of gullies.

Bunyoro stands in less danger of serious soil erosion than the rest of the Western Province and, although the standard of soil conservation work has been maintained, it is difficult to effect much improvement in certain areas due to lack of support from many of the chiefs. Very good progress was made in the Biseruka area, however, where practically all the land under cotton is well laid out in contour strips protected by three-yard grass wash stops and trash is commonly laid down between the rows on the contour. Most of the paths are protected by silt pits and bunds.

The Agricultural Officer, Kigezi, is quoted as follows:—

“The increasing pressure on the land is leading to increasing erosion in spite of the intensive soil conservation campaign. This is partly due to the cultivation of unsuitable land and partly to the difficulty of maintaining a sufficient proportion of resting land. Much of the land is not

rested for an adequate length of time and its fertility is therefore declining steadily. The only solution to this problem seems to be resettlement of large numbers of Bakiga. The movement of about 100,000 people in the next two years appears desirable.

Some considerable progress in soil conservation might be made if suitable high value economic crops could be found. In the past it has been the policy that the district should feed itself but reconsideration of this policy is indicated. The desire for cash income is clearly shown by the tremendous increase in maize growing when the price was raised, but maize produces a relatively low cash yield per acre and the bulk of the produce makes its cultivation uneconomic as transport costs are very high. There is a great potential food production in Toro and Ankole Districts, and it might be wise for Kigezi to consider buying its food from elsewhere and concentrating on producing high value, high labour requirement crops such as vegetables, tobacco and coffee which will stand the cost of transport to consuming areas. The eventual aim should be to export finished products, not raw materials. Such a policy might well result in the reduction of the acreage under cultivation and thus provide an alternative to successive large-scale resettlement schemes. The advantages from the soil conservation point of view are obvious."

One of the causes of serious erosion on the steep hillsides in Kigezi is the digging-away of the banks formed between strips during natural terracing. Endeavours are being made to stop this dangerous practice and to induce cultivators always to leave uncultivated a belt of land a few feet wide at the bottom of each strip. This can support a vigorous growth of grass, etc., to bind the top of the bank, and weak spots are easily strengthened by dumping weeds, trash, etc., in order to build them up where necessary.

The efforts of the department in Toro have been directed towards convincing chiefs and cultivators of the importance of soil conservation, for it is largely due to their complacency that this district lags behind the rest. Trash bunds have hitherto been the usual method of preventing erosion, when this has been attempted at all, but grass bunds on the Buganda model are now being very strongly advocated, except on gently sloping land suitable for mechanical cultivation, where the Eastern Province three-yard grass wash-stop between strips is quite adequate and more suitable. Special areas have been selected in Bwamba and Busongora where additional staff is employed on marking out the land and demonstrating the construction of bunds. In Busongora, also, a plan for the development of the plains is being worked out, embracing group farming and laying the land out in strips based on the contour, suitable for mechanical cultivation.

Soil conservation competitions were held in all districts and in Kigezi His Excellency the Governor personally presented his shield to the winning gombolola, Nyarusanje.

ANIMAL HUSBANDRY

Cattle in Kigezi present a difficult problem on account of the pressure on the land and it is evident that except for an occasional milk cow they have no proper place on the steep hillsides in the over-populated parts of the district. In the areas where more land is available and where the slopes are comparatively gentle, the land available for grazing is being increased by changing from alternate strip cultivation to a block layout.

The Kachwekano herd was maintained throughout the year and some progress in housing and management was made. However, there has been little improvement in the herd itself; the calving interval is in the region of 600 days, so that reproduction and selection are slow. Some culling has been done and some local stock will be bought early in 1954. During the year water was carried up to the kraal for the cows and calves to avoid the waste of time and energy in going down to the swamp for water and climbing up again; this has improved their condition but is impracticable from the economic viewpoint and will be discontinued. It is proposed that in 1954 the breeding herd should be transferred to the lower part of Valley I, where the cattle will be closer to water, to the food they eat and to the land where their dung is required. Grazing would still be mostly on higher land and the grazing experiments would suffer no detriment. It is hoped that introduction of new local stock in 1954 combined with mineral supplements will improve the breeding performance and particular stress will be placed on the economics of the herd.

The flock of sheep was maintained and culled during the year but here again fertility seems low on Kachwekano. A new ram will be obtained early in the new year as the present sire is in danger of breeding with his daughters.

The goats obtained in 1952 have, so far, failed to breed; this is thought to be due to sterility of the billy and he has been replaced.

The small Teso Zebu herd at Kyembogo was maintained on the ranged system and night paddocking was found to be successful. Five calves were born during the year and the herd has increased to twenty-nine head. The bull, who was introduced too young, has now greatly improved in size and appearance, and the cattle generally, though small, are in excellent condition.

PASTURE WORK

The improvement of bare hillsides in Ankole by planting black wattle and closing them to grazing for a time has already been mentioned. At Rubare Farm work has started on grasses and it was found that *Bromus marginatus* ex Kachwekano could be successfully established.

In Kigezi the studies of grassland improvement and trials of grasses and legumes were continued. Results appear to confirm earlier findings and will be discussed in detail in Part II. A new permanent grazing

experiment was laid down on a larger scale than hitherto, comparing sown mixtures of grasses and legumes with natural regeneration and natural permanent pasture.

AGRICULTURAL EDUCATION AND EXTENSION WORK

During the year schools were visited in the course of ordinary touring by Agricultural Officers and advice and assistance was given when required as regards the laying out and management of school gardens and the agricultural side of the teachers' work. Agricultural Officers and their senior staff also gave assistance with the judging of school garden competitions.

Nine apprentices were sent to Bukalasa for the one year's course, but four were sent home as being unfit for further training.

One Assistant Agricultural Officer attended the refresher course at Bukalasa during November and December.

At Kabale the Agricultural Officer and Veterinary Officer jointly held a course for thirty teachers.

The Agricultural Officer, Toro, held a three-day course at Kyembogo attended by all his staff, and all the Bunyoro members of the department gathered at Hoima during June for the purpose of reviewing the work of assistant instructors.

Lectures and talks were given by officers of the department to clubs, societies, etc., on a number of occasions.

The Agricultural Officer, Toro, visited Gulu and Lira in July to study the methods employed on the farm schools there, and in December he accompanied the Agricultural Officer, Ankole, on a most useful and instructive tour of Buganda and the Eastern Province.

The Senior Assistant Agricultural Officers, Bunyoro and Ankole respectively, gave talks to the science students at Makerere on the work and conditions of service of Assistant Agricultural Officers and the opportunities in agriculture generally with a view to encouraging entrants to the Faculty of Agriculture.

A party of Toro chiefs visited Kigezi, and in Ankole chiefs from Shema visited the Rubaya-Rushozi salient. Fifty Buhwezu chiefs paid a four-day visit to Ruampara, Kajara, Igara and Shema.

In Ankole, development campaigns were held at Ibanda, Rubirizi and Kibingo and these started with a "Leaders' Course" which lasted one week. Lectures were given by the writer, the Agricultural Officer and the Senior Assistant Agricultural Officer. Demonstration plots and exhibits were set out to show various good and bad aspects of agricultural practice.

Successful agricultural shows were held at Hoima and Mbarara as part of the Coronation celebrations in June, and at Bundibugyo and Kyegegwa in Toro in December.

PESTS AND DISEASES

There have been no major outbreaks of insect pests during the year, although the common ones, which seem to be always with us, continued to take their toll. Perhaps the most serious was *Aphid* on peas in Ankole and Kigezi, but this pest has abated considerably since 1952.

A considerable amount of damage was done by elephant, hippo, pig, baboon and monkeys.

Panama disease (*Fusarium oxyaporium* var. *cubense*), which caused something of a panic in 1952, has continued to infect the bananas in Ankole but without any really devastating effect on the crop.

Maize rust (*Puccinia polysora*) has been confirmed from Bwamba but the Agricultural Officer reports that it did not seem to cause any serious damage to the maize crop.

Pasmo disease (*Sphaerella linorum*) was less prevalent on flax, and dodder also seems to have been less in evidence.

The tobacco crop in Kigezi was severely affected by leaf curl, and this disease appeared to be associated with poor standards of cultivation.

At Rubare Farm a virus disease of soya bean did considerable damage to the crop.

Mosaic disease on cassava continued to be prevalent but good progress was made in some parts of the province with the spread of resistant varieties. Greater attention was given to the roguing and extension of increase plots at county, gombolola and miruka headquarters and at departmental farms and coffee nurseries. In Ankole, where food is more often a problem than in Toro and Bunyoro, there was a fairly good response to propaganda and it is estimated that 760 acres of mosaic resistant cassava were planted during the year. The main avenue through which disease-free planting material is issued in Bunyoro is the co-operative farms, who were supplied with large quantities from Bulindi. In north Kigezi much of the cassava planted is of mosaic resistant varieties, particularly in the resettlement areas. Toro lagged behind other districts but the number of increase plots has more than doubled during the year and valiant endeavours have been made to gain the co-operation of the chiefs and people.

EXPERIMENT STATIONS

The development of Rubare Farm was held up considerably because of the presence of Panama disease in Ankole and the probability that this station would consequently be used as a research centre. With the discovery of the disease in Buganda, however, this became unnecessary and it was possible to carry on the normal programme of work. Planting of the usual annual crops took place in the first and second rains, including a maize and groundnuts interplanting trial, a manurial trial on sweet potatoes, a replicated experiment to compare four varieties of soya bean,

and various seed increase and observation plots on beans, peas, finger millet, sorghum, English potatoes and *Bromus marginatus*. An important activity was the increase of mosaic resistant cassava. A lusuku was established, and the Robusta and Arabica coffee demonstration plots and nursery were developed and improved. Observation plots were continued at Biharwe and Rubaya in the *morsitans* tsetse salient.

At Bulindi Farm, the Robusta coffee shade and mulching observation plots were well maintained and the new coffee nursery brought successfully into use. An area of Heavy Western tobacco was grown for seed production and the Entomologist carried out experiments on the use of D.D. against eelworm. A cotton variety trial was conducted for the Botanist and various observation and seed increase plots of other annual crops were grown. The production of mosaic resistant cassava was pressed forward.

The pasture work at Kachwekano Farm has already been mentioned. Trials and observation plots of food and economic crops, grasses and legumes were maintained, and work on livestock is described in another section. The "museum" plot of Arabica coffee was carried on, with modifications as regards pruning.

At Bugangari good results with Robusta and Arabica coffee are being obtained in the demonstration plots, and the increase plot of mosaic resistant cassava has produced large quantities of planting material. The coffee plots at Kebisoni were abandoned since that area generally is unsuitable for the cultivation of this crop. With the extension of resettlement, a new centre is planned in Kinkizi.

During the year an endeavour was made to improve Kyembogo Farm and considerable success was achieved. The Kent's Arabica coffee was severely pruned and the ground treatments discontinued except for mulching; the removal of the undesirable shade trees was completed, and all these measures had beneficial results. In the annual cropping area a determined attack has been made against "lumbugu", and it is hoped that night paddocking of cattle on the resting land before it is broken up will go a long way towards restoring fertility. The new banana garden is now successfully established and is yielding well. A pump and water-trough were installed for the cattle.

A small farm has been started at Rwigo in Bwamba as a demonstration centre and a supply point for mosaic resistant cassava and paspalum grass. The Manila hemp and cocoa at Nyaruru have been maintained.

MECHANICAL CULTIVATION

The Special Development Branch maintained a mechanical cultivation unit in Bunyoro during part of the year and dealt with a total of 379 acres first and second ploughing. Most of the work was done for farming groups and the presence of the unit was a stimulus to agriculture in the Karujubu, Bujenje and Bwijanga areas where work was concentrated.

In Toro two tractors belonging to the department and one belonging to the African Local Government were at work and ploughed 146 acres, of which 132 were disc-tilled.

A large-scale and progressive farmer in Bunyoro, purchased a Ferguson tractor, he being the first private African tractor owner in the Western Province.

LIAISON AND CO-OPERATION WITH AFRICAN LOCAL GOVERNMENTS

This was excellent in Kigezi, where the African Local Government and chiefs are deeply interested in agriculture and have assisted throughout the year in pressing reforms and improvements needed in the district. In Ankole also the African Local Government has been most helpful to agricultural progress. The other two districts are not so much alive to the importance of agriculture and especially towards the conservation of their own land. In Toro there have been cases where chiefs have failed rather lamentably to give the assistance that could reasonably be expected.

AGRICULTURAL LEGISLATION

Agricultural bye-laws were enacted last year in Ankole, and have been proposed for Toro but these appeared to be too comprehensive and are still under consideration. The District Team in Kigezi has decided that, at this stage at least, hard and fast bye-laws are not desirable. In Kigezi the authority of the chiefs is still considerable and rules for cultivation, etc., are better applied as advice which can be enforced where necessary by the existing Native Authority. The present writer is in full agreement with this view, for agricultural practice must often be subject to variation, especially in Kigezi where conditions vary so widely. While the bye-laws may be excellent things in some ways, they are an encumbrance when a change of policy is desirable. For example, it would have been embarrassing now in Kigezi if there had been a bye-law requiring all cultivation to be on the alternate strip system.

Section II—Food Crops

ANKOLE

Lack of rain during the latter part of 1952 caused some anxiety about food supplies and during the first quarter of 1953 local shortages occurred in the drier areas of Nyabushozi and Kajara. Intensive propaganda was carried out and large areas of the main food crops, especially cassava and sweet potatoes, were planted as soon as the weather permitted, with the result that the first rains produced a satisfactory food supply before the advent of the main dry season. There was at times some shortage of bananas, which went to Shs. 5 per bunch in Mbarara. Planting of the second rains food crops was strongly encouraged during August and

September and the acreages of beans, groundnuts, maize, finger millet, sorghum and sweet potatoes all showed increases compared with the third quarter of 1952. Later in the year, the dry areas again suffered from a minor scarcity of food and there was a heavy demand for maize meal and on cassava from the reserve food plots. In other parts of the district advantage was taken of the good rains to plant large acreages of sweet potatoes, and a special campaign was undertaken by the chiefs to ensure the preservation of planting material throughout the dry season. At the end of the year food supplies were abundant except in the dry areas, and no anxiety was felt for the near future. In regard to methods of cultivation, a further improvement in banana gardens can be recorded, and there has been a good deal of success in extending the cultivation of mosaic resistant cassava.

BUNYORO

With the exception of a dry spell in May, Bunyoro was fortunate in having weather that was very favourable to the growth of the usual food crops, and good yields were obtained in both the first and second rains. During the first half of the year bananas were scarce but, by the end of it, supplies were plentiful. The people were able to supplement their diet by eating green maize from the record crop grown for sale. During October and November sweet potato planting was encouraged, notably in Kibanda. At the end of the year prospects were good, and there have been increases in the acreages planted to cassava and sweet potatoes.

KIGEZI

Food supplies were sufficient throughout the year although there were occasional local shortages of certain crops. Peas in particular have been scarce in some areas due to *Aphid* attack. The food position towards the end of October seemed precarious and a serious deficit could have occurred early in 1954 had not the rains in November been adequate. At the end of the year, prospects for the future were fairly good provided the early rains of 1954 prove to be plentiful. Household reserves are satisfactory in most areas but would not last long in the event of crop failure. It has already been stated that with its rapidly increasing population, Kigezi cannot go on as at present and that one bad season is likely to result in famine.

TORO

The year started with food supplies in a satisfactory state although beans and groundnuts were scarce and dear in the markets. A large crop of the former became available during March and supplied the local demand besides producing a surplus that was either sold or stored. During August and September there was some shortage in Mwenge and Kyaka due mostly to the laziness of the people, but later there was a marked increase in the attention paid to food production. Generally, however,

yields from crops grown in both the first and second rains were good and there were adequate supplies of all the usual foodstuffs. At the end of the year, future prospects were satisfactory.

Section III—Economic Crops

COTTON

1952/53 *Season*.—The variety grown in Bunyoro was again BP52/6, and the buying season opened in Biseruka in the third week of December. Marketing proceeded smoothly except as regards co-operative and other societies, and the total crop amounted to 4,140 tons (7,237 bales) of which 79 tons were bought as "B" grade.

In Toro, BP52 was planted and a crop of 2,359 tons was produced (4,040 bales), 49 tons being bought as "B" grade. Marketing began on the 16th February.

Grade and quality were better than usual in Bunyoro and fairly well up to standard in Toro.

1953/54 *Season*.—In Bunyoro, planting commenced in May, using locally grown seed of the same variety. Generally, weather conditions during the planting period were favourable and germination was satisfactory in all areas. During the growing period, especially in August and October, excessive rains resulted in too much vegetative development, and in Biseruka some damage was done by flooding. *Lygus* damage was heavy and widespread. The acreage planted was 25,227, compared with 24,972 in 1952, and the crop is estimated at 8,200 bales.

Toro District was supplied with BP52/6 seed from Bunyoro. Planting began in June and germination was good. Except for a dry spell in July, weather conditions were very favourable for growth and, in Busongora particularly, the cotton remained remarkably free from *Lygus* and other pests and diseases. The acreage planted is given as 23,199 compared with 28,112 acres in 1952. In Toro it is regretted that very little reliance can be placed on figures of acreages, due to the difficulty of obtaining accurate planting returns from chiefs and it is likely that there was, in fact, no serious reduction in acreage. The crop is estimated at 4,200 bales.

COFFEE

In Ankole, in accordance with the plan to increase coffee production, the number of coffee nurseries was increased from 33 to 45 and these are capable of producing over one million plants per annum, sufficient for planting some 2,000 acres of Arabica and Robusta. On the whole, nurseries were well maintained but there was a tremendous loss of coffee seedlings by theft. Unfortunately, many were taken while still much too small for planting out and could not possibly survive. A number of nurseries also were burned by disaffected persons disliking "bulungi

bwansi" labour. The further rise in prices gave more incentive to growers to maintain their coffee at a high standard of cultivation and a further improvement was effected, notably as regards mulching. Marketing continued as usual but no useful figures of production are available. Yields, however, must have been good, judging from the crop ripening on the trees.

Considerable increase in the interest being taken in coffee was noticeable in Bunyoro and departmental nurseries were extended and improved at Bulindi, Hoima and Masindi. A scheme for nurseries to be started and maintained by the African Local Government did not make much progress, however, although it has resulted in one nursery being established at Bujenje. There was an improvement in the management of the existing small acreage and sales are given as 20 tons of clean coffee approximately.

In Kigezi sales of coffee were negligible but the desire for crops yielding a high return per acre has greatly stimulated interest and large numbers of seedlings were issued in the north from departmental nurseries, besides those which were stolen. Growers there are allowed 50 Robusta and 25 Arabica trees in the first instance in suitable areas, but in the south they are at present being limited to 25 Arabica trees to be grown in the immediate vicinity of the household.

There has been a high demand for coffee plants in Toro also and several new nurseries have been opened. The standard of planting and maintenance is very low in this district and a high percentage of the young trees are allowed to die. The present high prices for coffee do not appear to have caused as much improvement in the cultivation of established plots as in other places. In Bwamba, a special effort was made to improve the quality of the coffee brought in for sale and very good results were achieved by introducing improved methods of drying and grading. The loss in quality which caused complaints a year ago has now been fully recovered, and growers again enjoy the benefit of an enhanced price.

TOBACCO

Fire-Cured—Bunyoro.—Preparation of nurseries started in December and sowing took place in February. Germination was good in all areas and transplanting was begun in April under favourable weather conditions. A dry spell in May held up planting for two weeks but the weather changed towards the end of the month and good rains became general. The total acreage was 3,913 and the crop made good growth, with hail damage almost negligible. Curing of the crop was carried out under ideal conditions and marketing began on 5th October, finishing on 17th December. Arrangements on the whole were satisfactory and buying was smooth and orderly at all markets. Prices were the same as in 1952, i.e., 74 cents per pound for Grade I and 50 cents per pound for Grade II. The total crop purchased amounted to 2,126,983 lbs., of which 1,529,407 lbs. or 71.9 per

cent. were Grade I and 597,576 lbs. Grade II. Farming societies in Karujubu and Bwijanga produced some excellent leaf and some of them sold 85 per cent. of their tobacco as Grade I.

Air-cured—Kigezi.—Two crops were grown in northern Kigezi. The first crop bought yielded 1,317 lbs. of Grade I and 17,242 lbs. of Grade II. Grading still needs much improvement and particularly in Kinkizi curing and presentation for sale were poor. The whole crop was bought by Mutolere Mission for cheroot-making. Prices were 74 cents for Grade I and 50 cents for Grade II. Crinkle leaf virus has been the most serious disease of both crops; this may be allied to shallow digging and poor planting. The crop in the ground now gives only fair promise.

In the second rains a small crop of air-cured tobacco was planted at Rubaya in Ndorwa Saza to see whether the crop can be grown in southern Kigezi. Trial plots were also grown throughout Ndorwa. Results so far show fair promise.

Flue-cured—Bunyoro.—Ten acres were planted by the Kiigya Farming Societies who were supplied with seedlings from Bunyoro Agricultural Company. The leaf was sold green to the company at seven cents per pound for Grade I and five cents per pound for Grade II. A large proportion of the crop was rendered worthless because of hail damage. Leaf sold was as follows:—

		<i>lb.</i>
No. I	..	11,096
No. II	..	4,217
		15,313

Flue-cured—Kigezi.—Messrs. Kigezi Industries Limited have built one barn at Bugangari and will purchase green leaf in that gombolola in January, 1954. The crop does not promise very well as there was a considerable shortage of seedlings due to two floods which removed most of the beds. Crinkle leaf virus is widespread and weather during the growing period has been unfavourable. Sufficient leaf should be available for the barn to enable curing trials to be done.

Nicotine—Ankole and Kigezi.—This crop has now been discontinued in both districts because of its unpopularity and small return per acre and to changed conditions in the insecticide trade. During the year, only a negligible acreage was grown in Ankole, and in Kigezi the crop grown in the second rains of 1952 yielded 153,784 lbs. from 607 acres. The final crop, grown in the first rains of 1953, amounted to 588 acres and buying returns have not yet been received. It is understood that much of this crop has been sold locally for smoking.

OILSEEDS

Groundnuts.—In Ankole there was a slight increase in acreage and sales rose by eight per cent. Propaganda for better cultivation, with heavier seed rates, was continued. Marketing proceeded smoothly at prices satisfactory to growers.

Castor Seed.—It is reported from Ankole that 443 tons were marketed, valued at £17,614, and in Toro the quantity sold is given as 167 tons. In Kigezi, 164 tons were sold, valued at £5,025, making this crop rank third in economic importance in that district.

Linseed.—29 tons of linseed were produced from the flax crop grown in 1952/53 in Kigezi.

Sunflower.—The acreage in Kigezi has dropped from 408 to 87 acres and sales from 38.6 tons to 12.9. There has been an increase in the cultivation of this crop by West Nile settlers in Bunyoro.

Sim-sim.—Production for sale was recorded as 48 tons in Bunyoro.

GRAIN CROPS

Maize.—In all districts there was a considerable increase in maize production and the acreage planted in 1953 was 62,777 compared with 49,731 in 1952, and the corresponding sales for the Province were 43,400 and 10,850 bags for the two years respectively. In Ankole, Bunyoro and Toro the selling of the increased crop presented no difficulties at or above the fixed minimum price of 15 cents, but in Kigezi, where there was a large surplus over local requirements, the marketing of the crop grown in the first rains caused a great deal of trouble. A second large crop was planted with the second rains and it is estimated that this will produce a surplus of 15,000 bags over local requirements. Maize growing was encouraged as a cash crop in the Resettlement Areas and there was good reason to believe that Kilembe Mines would be glad to purchase any surplus. With the high prices offered, however, the cultivation of maize increased with tremendous rapidity over the whole district and measures have had to be taken to reduce this crop to its proper place in the economy of the district.

PULSES

Beans.—In Ankole there was a decline in acreage from 21,000 to 17,500 but sales have apparently increased from 107 tons to 548. There was an increase in acreage in Toro and a marketable surplus of 93 tons is recorded.

Soya Beans.—The total acreage in Ankole was a little less than in 1952 but sales have apparently increased from 122 to 220 tons. It should be mentioned, however, that very little reliance can be placed on buyers' returns in the Western Province, and sales in both years were no doubt much higher than the figures given.

Field Peas.—The depredations of *Aphid* caused a decline in the acreage, both in Ankole and Kigezi, although sales were about the same as in 1952.

MISCELLANEOUS CROPS

Flax.—The Ankole and Kigezi crop sown in 1952 was ready for marketing in March but owing to the absence on leave of the Field Officer

(Agriculture) and pressure of district work on the Agricultural Officer, it was not possible to start buying until May. *Sphaerella linorum* was less in evidence than in the previous year and the quality of the crop was generally better although lodging detracted from the appearance and value. Total purchases were 130 tons of straw and 29 tons of seed as compared with 166 tons of straw and 27 tons of seed from the 1951/52 crop. Retting commenced late in May and finished early in August, and the factory was in commission from 17th August for about two months.

The following table gives a comparison between the last three crops:

	1950/51	1951/52	1952/53
Acreage	400	364	358
Straw, tons	303	166	130
Seed, tons	56	27	29
Fibre, tons	21.4	13.3	8.47
Tow, rescutched	10.7	7.0	4.7
Tow waste, rescutched	5.28	3.7	3.47
Fibre outturn	9.3%	8%	7.6%

1952/53 was a very disappointing year so far as production was concerned and it was decided to make an attempt to resuscitate the flax crop in 1953/54. The price of Grade I straw was increased from six cents to eight cents per pound, leaving Grade II straw at three cents per pound and seed at fourteen cents per pound as formerly. Endeavours were made by the Field Officer and by district staff to increase the acreage and improve methods of cultivation. The variety grown was again *Stormont Gossamer* and a total of 506 acres was planted, the area in Kigezi having been extended to include Rugeyo and Ruhinda gombololas. Sowing commenced around 20th September with the advent of a few heavy showers and the early crop got away to a good start. Unfortunately, a very dry spell in October seriously retarded growth and, although prospects improved with the rains in late November, they could only be described as fair at the end of the year. All seed was cleaned and dressed with Agrosan prior to dispatch for sowing and there was little sign of dodder.

It was agreed that the variety *Stormont Gossamer* should be replaced by *Hollandia* and arrangement were made to obtain supplies of seed from Kenya and from Kawanda for planting in 1954.

Onions.—In Ankole there was a 40 per cent increase in 1953 plantings over the previous year and sales have been doubled. Kigezi produced 168 tons.

Potatoes (Solanum).—665 tons were purchased in Kigezi valued at £5,220, which makes this crop second in economic importance to maize in that district. 155 tons of this amount were sold through the vegetable scheme.

Vegetables.—Vegetables are grown in Kyanamira, Bubale, Maziba and Bukinda gombololas of Kigezi District. The main areas of production are at Muyumbu, mile three on the Soko Road, and at Nyanza, mile 12

on the main Mbarara road. Bubale is the main potato-growing area and it also produces a small quantity of hard vegetables, i.e., cabbages, cauliflowers and carrots. Production of these will not be increased in this area as the potato production should be maintained. Bukinda people have been asking for permission to grow for some time, and as production has fallen in Muyumbu, seeds were issued to Bukinda in early December. Approximately forty people had bought seeds by the end of the year in that area.

During the last week of January, two lorry loads were dispatched for the first time, and two loads per week have been maintained throughout the year. Seasonal shortages and surpluses have occurred from time to time, but generally speaking supplies have been maintained. Supplies of celery were much too large between September and November, up to 1800 lbs. being purchased weekly at Muyumbu. Cabbage and cauliflower supplies also fluctuate, while beetroot and lettuces were in short supply for several months. Parsnips have been introduced, and consideration is being given to the growing of asparagus and globe artichoke for consumption in hotels.

Markets are held at Muyumbu, Bubale and Nyanza every Monday, Tuesday and Wednesday. Messrs. Kigezi Industries Limited pay cash on the spot and sell in Mbarara, Masaka, Kampala and Entebbe, as well as supplying other centres, i.e., Kilembe Mines, East African Railways and Harbours and Luzira Prison.

The total amount of produce purchased through the Vegetable Scheme was 440 tons, including 155 tons of potatoes and 25 tons of onions, and the total value to growers was over £5,000. These figures show a further striking advance on previous years (1951—£192, 1952—£2,329) and vegetables have now taken a prominent place among the economic crops of Kigezi. Growers appear to be satisfied with the returns they receive for their labour and many have used their profits to purchase bicycles, goats, sheep and generally to improve their standard of living.

RESETTLEMENT

During the first nine months of the year there was little movement of settlers in Kigezi but the delayed onset of the second rains in certain areas caused some anxiety and a number of people moved to the resettlement areas of Kigezi and Ankole. The numbers for 1953 are not accurately known but will probably be in the region of twelve hundred people, of whom approximately two-thirds received assistance to settle in north Kigezi. In addition, 230 assisted settlers went to the Kati area of Igara County in Ankole and a considerable number of unassisted settlers infiltrated into Ruampara.

It is estimated that approximately 7,000 more people can be accommodated within Kigezi itself, but this amounts to little more than half a year's increase. The District Team considers that it is necessary to arrange for the movement of 100,000 people within the very near future.

Where they are to go and how this colossal resettlement project is to be carried out is a matter that is engaging the thoughts and energies of all concerned. A resettlement survey of Kigezi has been planned for 1954 and will take nearly a year to complete. As a preliminary, a trial survey was carried out in November and December and yielded some very interesting information, notably that the area of land under cultivation appeared to be only 1.86 acres per taxpayer and that the corresponding area of resting land was 1.35 acres.

ANNUAL REPORT—NORTHERN PROVINCE

By G. D. BADGER, *Senior Agricultural Officer*

Section I—General Review

WEATHER

Normal dry season conditions continued until the third week of February, when scattered showers were received in all districts, except Karamoja. The dry weather, however, quickly returned and March was generally hot apart from a few scattered showers. Conditions became unsettled towards the end of the month but it was not until the second week of April that planting rains were received, first in Acholi and Lango and then in West Nile and Karamoja. From the second week onwards, there were good general rains with the result that total falls for April were in most cases up to average. Rainfall in May was very disappointing, conditions being dry except for a few scattered showers in the first week. All spring crops were adversely affected, in some cases severely, but a serious situation was averted by the advent of useful falls during June at the time of the normal break in the rains. During the third quarter rainfall was generally below average and badly distributed. West Nile was the most favoured area, receiving sufficient rain for planting to continue except in early July and at the end of August and the beginning of September. In Lango and Acholi less rain fell particularly in the lake-shore areas of Lango where abnormally poor rains were experienced. In Karamoja, conditions became progressively drier from late July onwards and by September it appeared as if the dry season had already started. Continued dry conditions throughout the province in early October gave cause for concern as to the food position in early 1954, but a serious fall in yields was averted by widespread rain during the second week of October. The wet conditions continued until the third week in November, after which localised rain coupled with cloudy conditions gave generally cool conditions until the end of the year.

AFRICAN AGRICULTURE

Increased interest in and awareness of agriculture as an economic venture were again apparent among growers, particularly in Lango and Acholi, while in West Nile the 1953/54 cotton crop promises to be a record one.

1953 was not an easy year for farmers, being marked by the late arrival of the spring rains and an abnormally dry May. During the second rains prolonged dry spells delayed planting in many parts and adversely affected crop growth, especially on the lighter soils. Good rains during October and November did much to restore the food position and also helped the late cotton. At the end of the year food prospects were reasonably satisfactory, while the cotton estimate for the province stood at 50,000 bales. Production of flue-cured tobacco increased by over 50 per cent. during the year.

The demand for mechanical cultivation was far greater than the department could hope to meet with the equipment available. Part of the demand came from individuals under the mistaken idea that mechanical cultivation is a short cut to large profits with less effort. There is, however, a growing number of people who are beginning to see the use of machinery in its correct perspective. Owing to the need to concentrate tractor units for purposes of supervision and maintenance there was not a little dissatisfaction expressed by growers who saw little prospect of units being sent to their areas.

A very encouraging development was the expansion of the group farming schemes in Lango and Acholi as a result of a substantial increase in the amount of mechanical cultivation carried out by departmental tractors. The groups increased in size and concentrated their cultivation into larger blocks, thus facilitating the work of the tractors and enabling the groups themselves to take advantage of the cheaper rates of hire. The preparatory work of removing bushes and trees prior to opening, however, showed little improvement. Mechanical cultivation was also carried out by tractors owned by the East African Tobacco Company, 75 acres being ploughed. As with departmental tractors, the demand for cultivation was far greater than it was possible to carry out. Many growers reported that opening land with tractors greatly increased yields of tobacco.

In West Nile District, a co-operative tobacco curing project made a promising start, showing sufficient profit on the first year's working to cover approximately half of the capital costs. The curing barn and ancillary buildings were erected by the East African Tobacco Company with materials provided from Community Development funds.

One progressive farmer in Acholi opened nearly 70 acres of land mechanically for the growing of flue-cured tobacco, cotton and millet. During 1953 he cured his tobacco in a barn leased from the East African Tobacco Company, but has since commenced building his own barns and intends to concentrate on flue-cured tobacco in 1954.

On the soil conservation side, further progress was made, notably in the West Nile highlands. An improvement in the maintenance of grass strips throughout the cropping period is reported from Acholi and Lango.

Paddocking continued to interest a number of progressive individuals in Lango. White ants caused heavy damage to live posts and towards the end of the year angle iron posts were brought into use.

NON-AFRICAN AGRICULTURE

West Nile remained the only district where farming is carried on by non-Africans. Messrs. Busby Brothers had a successful year with flue-cured tobacco on their estate at Bondo, yields being the highest obtained in recent years.

The East African Tobacco Company planted 33 acres of flue-cured tobacco at Otrevu but owing to labour shortages yields were low. At Nakulu Estate, Messrs. Sthankiya continued to grow Arabica coffee, sugar cane and castor seed. Coffee, which is the main crop on the estate, was increased by the planting of a further 20 acres during the year.

AGRICULTURAL INDUSTRIES

Following the loss of Kitgum Ginnery by fire, the ginning capacity of the province was further reduced during 1953 by fires at Amaich and Palango Ginners which resulted in the almost complete loss of both ginneries, and left only seven working ginneries in the Lango zone. In East Acholi all the ginning for the zone was carried out at Paranga and Unyama. In West Acholi four ginneries operated, but Unyama Ginnery ceased working in July owing to damage by fire. Rhino Camp remained the only ginnery in West Nile zone.

A number of ginners made a start with reconstruction or rehabilitation of their ginneries according to approved specifications. Kitgum ginnery, apart from its ancillary buildings, was completely rebuilt and will operate during the 1953/54 season. It is claimed that this is the first ginnery in the Protectorate to be reconstructed in accordance with the provisions of the Cotton Ordinance, 1952. By the end of the year the reconstruction of Unyama Ginnery was nearing completion. In Lango, work was started on rebuilding Aloj Ginnery and there are plans for rehabilitating Nguny-boke and Ogur Ginners by 1955. At Rhino Camp the ginnery is being enlarged and improved according to approved plans.

Gulu Oil Mill did not commence crushing until September when it was purchased by Messrs. Gulu Millers Limited.

Flue-curing of tobacco by the East African Tobacco Company Limited continued in West Nile, Acholi and Lango districts. Total sales of green leaf in the three districts rose from 1,228 tons in 1952 to 1,875 tons in 1953, the corresponding increase in value to growers being from £8,361 to £12,983.

The erection of maize mills at Ngeta, Atura and Gulu was approved. The mills when erected will be permitted to purchase maize for gristing from outside the province only, the object being to produce maize meal for sale locally at competitive prices.

MARKETING

Owing to the relatively small cotton crop there was little congestion and marketing proceeded smoothly throughout the season. In Lango, the new Government-built stores were brought into operation for the first time. The system of rotational buying worked satisfactorily. It is, however, felt that no further extension of the system should be accepted in that the present arrangements represent a satisfactory compromise between the ability of ginneries to find suitable buyers and the need to provide adequate facilities to growers. As hitherto, no "kyalo" lorries were run in West Nile zone, but in other zones adequate transport was provided for growers, with the exception of those areas previously served by the ginneries at Ekwera, Chagwire and Bata. The firms concerned gave undertakings to supply "kyalo" lorries but, despite this, the position remained very unsatisfactory.

A certain amount of friction arose between cotton buyers and observers and there was some evidence that a proportion of observers attempted to use their position to extort money from buyers. On balance, it is considered that the system should be retained for the present.

Growers' groups increased in number in Lango and new ones were formed in Acholi and West Nile. A number of these groups was registered as co-operative societies. By reducing competition between ginneries, the new cotton legislation weakened the bargaining power of societies and groups and negotiations were often protracted. One newly formed group in Acholi still had cotton on its hands after the close of the season but permission to dispose of this cotton was granted. A similar concession was given to certain growers' groups in Lango. The principal co-operative societies in Lango, were, however, able to obtain a commission of Shs. 1/15 per 100 lbs. for their bulked cotton, while in Acholi, where the work of societies was less satisfactory, 65 cents was paid. No cotton was ginned on behalf of growers' groups during the 1952/53 season, except 40 bales in Lango.

Marketing of the 1953/54 crop opened on 14th December in all zones except West Nile. The early opening appears to have practically eliminated congestion at markets, despite the fact that the crop promises to be well above average. Arrivals were satisfactory during the first week but subsequently during December disappointing, particularly immediately after the Christmas holidays, and some complaints have been received from ginneries on this score. The early buying season was popular with growers and this should encourage early planting in subsequent seasons.

Tobacco marketing was arranged as in previous years, the East African Tobacco Company buying all the green leaf for flue-curing and the air-cured crop. No difficulties were experienced although a few complaints were received from West Nile growers that they had to carry their green leaf excessive distances. This complaint is being investigated.

Sunflower marketing in West Nile was arranged administratively and markets were provided in all producing areas. There were no sales of simsim or shea butter nuts, production being sufficient for home consumption only.

SOIL CONSERVATION

Propaganda for improving soil conservation work and encouraging chiefs to make use of the relevant bye-laws continued to occupy a considerable part of the time of all field staff. Notable success was achieved in the West Nile highlands but, in general, results were not spectacular. Nevertheless, it is felt that progress has been maintained in all districts.

In Acholi and Lango, relatively little difficulty was experienced in persuading growers to leave contour grass strips in their cotton plots, but, as in previous years, there was a tendency to hoe out the strips later in the cropping period. Among the group farmers the demarcation and maintenance of grass strips is well attended to, it being difficult to find even third year land unprotected. From West Nile, it is reported that the soil conservation shield competition has been most effective in maintaining interest in the work and that judging becomes more difficult each year.

In Kioga County of Lango a number of overgrazed areas, which had been closed to grazing, remained under the control of the local councils. One area which was considered fully regenerated was re-opened to grazing. No new areas were closed. In Karamoja, work commenced on the closing to grazing, by means of thorn fences, of three badly overgrazed areas, including one of seven square miles, near Moroto. Approximately five square miles of the latter area had been enclosed by the end of the year. A start was also made with the stopping of gullies on the lower slopes of Moroto mountain and the closing of areas so treated to grazing; this was followed up by the provision of demarcated cattle tracks to and from water-holes.

Further fencing for night paddocks was carried out in Lango, but in some cases damage by termites to the live posts made maintenance costs much higher than expected. It is hoped that the recent introduction of angle iron posts although much more expensive, will prove a satisfactory answer. A number of the paddocks fenced in 1952 were rather large and it should be possible partly to offset the higher costs by reducing the area enclosed.

The Geological Department's Dam Construction Unit worked in Pian County in Karamoja throughout the year and four dams were completed. Attempts were made to limit the number of stock watering at selected dams in Karamoja according to water capacity and grazing available, by means of a ticket system and dam guards. The tickets were stamped with the name of the dam, the name of the stockowner and the

number of cattle to be watered. It was found, however, that owners not having the necessary authority to water their cattle at a dam merely brought them surreptitiously by night.

During the year, detailed consideration was given to the serious problem of the deterioration of, and bush encroachment into, the wet season grazing grounds in Karamoja. A comprehensive plan for dealing with the problem was put forward by the District Team. The plan was examined by the Husbandry Committee and recommendations have been submitted for consideration. The main point raised by the District Team was that it was well nigh impossible to increase the present take-off of stock, which was less than the natural increase, and that there appeared no alternative but to improve the grazing.

ANIMAL HUSBANDRY

Departmental cattle herds were maintained at Ngetta and Abi Farms, while the African Local Government herd at Moroto continued to be under the supervision of the department. The Ngetta herd increased by four to 192 head and at the end of the year was made up as follows:—

Cows 38; bulls 24; heifers 38; bullocks 61; calves 31.

A limited amount of culling was carried out but it will be necessary further to reduce the herd if it is to be maintained entirely on the farm. The main breeding herd was reduced to 25 cows. The bull Rukara was with the herd throughout the year. A ranged herd was also maintained. The breeding policy was changed in the course of the year from dual purpose with emphasis on beef, to beef. Twelve cows and heifers were issued from the herd to Aler Farm School and two bulls were loaned to stockowners in the district. As in previous years, the cows of the breeding herd were milked once a day early in the morning and the calves were allowed to run with their dams during the day, but were housed separately at night. The average milk yield was 3.5 lbs. per day. The best cow produced 992.8 lbs. in 231 days, i.e., 4.5 lbs. per day. Milk recording will be continued so that the poorest milkers may be eliminated, on the grounds that a beef animal must have sufficient milk to produce a good calf.

The Abi herd was maintained in excellent condition and includes several promising beef animals. As at Ngetta, milking took place once a day and the calves ran with their dams during the day only. Spraying against ticks was carried out at weekly intervals. The herd numbered 44 at the end of the year and consisted of the following:—

Cows 12; bulls 3; heifers 7; bullocks 12; calves 10.

At Moroto the African Local Government herd produced 2,427 gallons of milk for sale. Nineteen cows calved during 1953. Improvements were made to the buildings of the farm and three additional strips totalling 11 acres were cleared of bush. Removal of bush to improve existing grazing was also undertaken.

Little change is apparent in the standard of animal husbandry in the province, but it is again worthy of note that a number of excellent animals have been exhibited at county shows. The interest shown in the herd at Ngetta by people attending cultivators' courses also gives hope for the future.

PASTURE WORK

The results of a series of grazing trials at Ngetta Farm, comparing the effect on subsequent crop production of grazing and no grazing during the three-year rest period, were analysed by the Assistant Director of Agriculture (Special Development). The following very interesting conclusions were reached:—

(a) Grazing gave slightly higher yields than no grazing with all crops, but the differences are only significant in the case of cotton, the first crop of the rotation.

(b) Natural regeneration and *Chloris gayana* gave higher yields than *Brachiaria decumbens* with first year cotton, second year eleusine and second year tepary beans. In the case of eleusine the difference was of the order of 40 per cent. and highly significant. With third year groundnuts the yields after *Brachiaria* were much higher than after *Chloris* or natural regeneration, the difference being approximately 40 per cent. and again highly significant.

It will be recalled that the previous series of grazing trials, which was analysed in 1947, indicated that the fertility after grazing was not lower than without grazing, while the comparison between seeded leys and natural regeneration suggested (the differences were not significant) that *Chloris gayana* was superior to natural regeneration.

The grazing trial at Iriri which consists of four paddocks of 100 acres each, and is designed to test the carrying capacity and methods of management of the dry season grazing grounds, in western Karamoja, continued. The grazing rate remained at one beast to five acres. As in 1952, it was found that at this stocking rate cattle could be carried on the four paddocks throughout the year. From the appearance of the pasture it would seem that an even greater head of stock could be carried and there are proposals for redesigning the experiment to test this.

The thorn scrub eradication trials at Koloswa and Cholol were maintained, there being no change in the treatments of cutting and burning. In the Koloswa trial, where the thorn scrub is very thick, burning alone has made little impression since the trial was started in 1947. At Cholol the bush is less dense and burning alone has appreciably reduced it, but grazing will not be possible at the present rate of improvement for a number of years. Stumping followed by grazing has also been shown to be ineffective in controlling the bush. The general conclusion is that with thorn scrub of the density met with in the two trials, stumping followed by burning is the only successful treatment. The corresponding trials in

south Lango have suggested similar conclusions. The next development would appear to be to see if the process of encouraging the establishment of perennial grasses can be speeded up by seeding.

IRRIGATION

The irrigation schemes at Agoro and Paloga in Acholi were again brought into use, extensive planting of sweet potatoes taking place from October to December. At Agoro sorghum was also grown but as at Paloga the main crop was sweet potatoes for food and as a source of planting material. A new area of approximately 20 acres was opened up at Pama near Mucwini and as at Paloga and Agoro the chief crop grown was sweet potatoes.

At Namalu in Karamoja, the irrigation investigation at the western foot of Mount Debasion was extended by the opening of a further 11 acres, six of which were under irrigation by the end of the year. Thanks are due to the Geological Survey Dam Unit for assisting with the clearing of trees and anthills from four acres, the remainder of the new area being dealt with by hand. A wide variety of crops, including rice, maize, finger millet, melons, cabbages, cauliflower, carrots and tomatoes, was grown successfully.

The flood irrigation schemes at Ngiminio and Nadunget in the same district continued as hitherto. At Nadunget there were 20 acres under cultivation, the area being divided into 16 plots of equal size, of which three were retained as departmental trial plots and the remainder made available for use by the local people. For the first time since the start of the scheme, the supply of plots was insufficient to meet the demand. Only sorghum and millet were grown by the local people, but in departmental plots crops grown included groundnuts, tepary beans and maize. Owing to the long intervals between floods, the yields from all plots were very low. This, however, should be compared with nearby plots where all crops failed completely.

The Ngiminio scheme is approximately 45 acres in area and subdivided into 32 plots of which 25 were offered to people living nearby. Owing to an outbreak of cattle raiding just after planting had commenced all plots were abandoned by local users. Departmental plots were, however, maintained. There were considerable intervals between floods but the effect on the crops was much less than at Nadunget. The following were some of the yields obtained:—

	<i>lb. per acre</i>
Finger Millet (threshed) . .	1,580
Groundnuts (unshelled) . .	940
Maize (cobs)	730
Sorghum L 28 (threshed)	1,514
Tepary beans	805

EDUCATION

Seven cultivators' courses of one week's duration were held at Ngetta for parties from West Nile, Acholi and Lango. A number of wives

accompanied their husbands in the parties from Acholi. The arrangement whereby an Assistant Agricultural Officer from the district concerned accompanied each party and took charge of the course worked very satisfactorily, and all parties appeared to be interested in both the talks and demonstrations. At Abi Farm two courses of one week were held for parties of cultivators from Jonam and East Madi.

Gulu Farm School had a very disappointing year. There was also not a little feeling concerning the extension of the farm boundaries. During the last quarter of the year training came to a standstill as practically all the pupils left the school having been either dismissed for misconduct or left of their own accord. In December arrangements were made for the appointment of a committee to advise the Principal and for regular inspections of the school by the officers of the Education and Agriculture Departments.

The cost of opening up the Aler Farm proved much higher than expected but progress was well maintained. Thirty of the original 36 pupils completed the first year of the two-year course and a further 18 pupils will be accepted in early 1954. The farm has now the nucleus of a breeding herd.

Koboko Farm School accepted 12 pupils who were mainly concerned with the developing of the farm and the school cannot be said to be running properly yet. At the end of the year a considerable number of buildings remained to be built. Approximately 20 acres of the farm were opened and planted.

PESTS AND DISEASES

Single specimens of the desert locust were found on a few occasions in Acholi during the first quarter. Thereafter, the province remained free until November when further isolated locusts were captured in Iriri in Karamoja, in Kwanja and Moroto counties of Lango and numerous scattered places in Acholi, while one specimen was found in East Madi.

The main interest centres on the pests and diseases of tobacco. Leaf curl was much more abundant than usual in Acholi and West Nile districts. Tobacco eelworm maintained its position of importance, but most serious of all was the attack by stem borer in West Nile, both in the nursery beds and in the field. A method was devised of cutting out the individual borers with a knife, which, although laborious, proved effective in saving the crop. The attack was less severe in the second flue-cured crop.

For the second year in succession *Lygus* attack was heavy on the large blocks of cotton planted by the group farmers at Ngai and Lukwir. Preliminary trials were conducted with spraying against the pest with a sprayer mounted on a tractor. Insect and boll counts indicated that the spraying had been effective but more definite information will not be available until the cotton has been picked.

EXPERIMENT STATIONS

In 1933, the old rotation at Ngetta Farm of continuous cropping and green manures was replaced by the present rotation of three years cropping and three years resting. The six main blocks of the farm totalling 36 acres have thus been under the rotation for 20 years. While it is difficult to produce figures which eliminate the effect of season, there can be no doubt that the general level of fertility has improved appreciably. The grass leys were grazed during most of the 20 years at approximately one beast per acre. For some 15 years the cattle have received supplementary feeding in the form of cotton seed and some of the increase of fertility may be attributed to this cause. It is, however, true that this level of supplementary feeding, which is estimated at one pound of cotton seed per beast per day, is not more than what a progressive African farmer might feed to his herd.

During the year, work already started at Ngetta on the grass grazing trials, cotton variety trials, tobacco and food crops continued. The farm was also used for demonstration purposes and was frequently visited by parties of chiefs, schoolteachers and others. As reported elsewhere, breeding work on cattle continued but with a change in policy from dual purpose to beef.

The gradual opening up of Abi Farm in West Nile proceeded and the experiment programme was enlarged. Trials conducted included tobacco planting methods, sunflower spacing and time of sowing, sorghum varieties and observation plots on a variety of food crops. Long-term trials included a rotation experiment with tobacco and a grass grazing trial. A breeding herd of cattle was also kept on the farm.

In addition to the above stations, four smaller centres were maintained chiefly for the purpose of testing new cotton varieties but at which experiments on tobacco, sunflower and food crops were also conducted according to local requirements. A small experiment farm was also run in the West Nile highlands for the purpose of conducting trials on coffee and local food crops.

EXTENSION WORK

Touring by field staff, thus securing regular contacts with chiefs and farmers, remained the most important means of putting ideas across. Other methods included chiefs' newsletters, pamphlets, competitions and the use of bye-laws. The newsletters have been found of considerable value in reminding chiefs of work requiring attention, and for passing on information of interest to growers, such as changes in crop prices, results of competitions and progress made with planting campaigns. Pamphlets were issued in connection with a drive to increase cassava reserves and to encourage early planting of cotton. Agricultural shows and competitions were organised as in previous years and again proved popular and effective. The bye-laws for the compulsory planting of cassava were helpful in safe-

guarding food reserves and it is interesting to note that the Lango District Council considered it desirable to raise the area of cassava to be planted by each taxpayer from one quarter to half an acre.

LIAISON WITH AFRICAN LOCAL GOVERNMENTS

Departmental field staff worked in close co-operation with local councils and chiefs in all agricultural activities, and representatives of African Local Governments were invited to discussions on matters affecting them whenever the opportunity offered. Particular interest was shown in the development of farm schools and useful suggestions were put forward. Although local opposition was shown to the acquisition of land for this purpose this was in no way associated with agricultural education, but represented the normal reaction of Africans when land is taken for any purpose other than their traditional farming. Local councils continued to control the closure to grazing of overgrazed areas on the advice of departmental field staff. In general, bye-laws were administered effectively, although greater use could have been made of those for the control of tobacco cultivation in West Nile and cotton cultivation in a number of areas. The successful agricultural shows in West Nile were only achieved by the close working together of all the departments concerned with the Local Government officers.

Section II—Food Crops and Food Supplies

The poor millet harvest of 1952 was followed by the early onset of the 1952/53 dry season which greatly reduced the yields of all autumn plantings, and the carry-over of food to 1953 was small. Grain reserves became exhausted early in the year in Karamoja, south Lango and east Acholi, but the shortfall was made good from cassava reserves and sales of maize meal through trade channels. The Lango African Local Government imported maize to supplement trade deliveries. Grain was also issued from African Local Government famine granaries in both Lango and Acholi.

A normal acreage of finger millet and sorghum was sown in the first quarter, but poor grass rains followed by the delay in the breaking of the main rains caused much re-sowing in April. The dry weather in May retarded growth and in the worst areas seriously checked it. Excellent yields were obtained in a few localities in the west of Acholi, but in most areas the harvest was well below normal. The planting of early sweet potatoes was also delayed, but from June onwards growers took advantage of such favourable weather as offered to plant root crops, and good acreages were established. The wet weather in October and November greatly improved the condition of all established crops and favoured the sowing of pulses and swamp and valley plantings of sweet potatoes. At the end of the year the food position was reasonably secure. It is anticipated that food will be very short during the second quarter of 1954 in

a number of areas, particularly near the lakes in Lango, but provided the 1954 spring rains are not unduly delayed no general shortages are likely to occur.

Section III—Economic Crops

COTTON

1952/53 Season.—Marketing opened on 5th January and grade was high in all zones. It was, however, found that the early dry season coupled with delayed planting had seriously affected yields, particularly in Lango where the final output was the lowest since the 1947/48 season. With the reduced crop and improved marketing facilities, buying proceeded smoothly, and the arrangements for the use of hessian squares and inspection prior to purchase proved quite satisfactory. Although the production of 25,950 tons was on the low side compared with output in the previous four years, it is, in fact, above the 1945–53 average.

1953/54 Season.—Preoccupation with the planting of food crops held up preparation of land in April, while the dry weather in May further delayed this work. Good rains in the second half of June enabled planting to proceed rapidly and the acreage sown in Acholi and Lango was greater than in the corresponding period in 1952. There were heavy demands for seed in July and planting made excellent progress, while the early sowings grew well. The early portion of the crop continued to make good growth in August but the later sowings were affected by the dry spells, particularly on the lighter soils. The late cotton received a further check from the prolonged dry weather in September. In October and November the above average rains greatly improved the condition of the mid-season and late sowings, and, although by the end of November the wet weather had caused some loss of crop from the early cotton, the overall effect was a substantial improvement in prospects. West Nile zone generally received better rains than other zones and a crop of 12,500 bales was forecast. The estimate for the province (including Kumam) at the end of the year was 53,000 bales.

TOBACCO

Air-cured (West Nile).—Six nurseries of 100 beds each were maintained by the department for sale of seedlings to supplement those produced by growers themselves. The majority of the people preferred to grow their own seedlings and receive the full price for their leaf. Most of the private nurseries were tended satisfactorily. Planting commenced in April and continued until the end of May. The total area established was 1,256 acres which compares favourably with 1,016 acres in 1952 and 704 acres in 1951. Rainfall was adequate in most areas at the time of transplanting and the “take” was good. Damage by stem borer, however, reduced stands considerably. Subsequently rainfall was generally adequate and all plantings grew well. Harvesting commenced in June, the main

crop coming in during August. Marketing opened on 19th October and 287,836 lbs. of cured leaf were sold, of which 68 per cent. was Grade I. The percentage of Grade I tobacco represents a substantial improvement on the previous season when 49 per cent. was so graded. Total production was, however, well below the 1952 crop of 331,774 lbs. It is estimated that no less than 100,000 lbs. of leaf was sold illicitly outside the Protectorate. The prices were 74 cents for Grade I and 50 cents for Grade II. The value of the crop to the grower was £9,549 and the average yield per acre was 229 lbs. of cured leaf. For the first time the Heavy Western variety was grown together with Jamaica Wrapper. The new variety appeared to be superior in both yield and quality of leaf, and the growing of Jamaica Wrapper will be discontinued in 1954. An encouraging feature of the year was the spread of tobacco growing in Maracha and Ayivu counties.

In Acholi there was no enthusiasm for the growing of air-cured tobacco and sales amounted to only 1,183 lbs.

Flue-cured (West Nile, Acholi and Lango).—As in previous years, two crops were grown in each district, the main planting taking place in the spring rains. In West Nile, transplanting started in April. It was necessary to replant a number of the early plots but subsequent plantings grew well and the late plantings benefited from the good rains in October. As with the air-cured crop stem borer took a considerable toll. The weight of green leaf sold was 2,769,554 lbs., of which 51 per cent. was purchased as Grade I. In 1952, West Nile District produced 1,501,108 lbs. green leaf and the province 2,751,379 lbs. The average yield of cured leaf was 307 lbs. per acre. Jamaica Wrapper was the only variety grown. Two additional curing centres were built in the district, bringing the number to six.

Less favourable weather was experienced in Acholi. Lack of rain delayed planting of the first crop and many of the seedlings had become too big for transplanting when this became possible. The dry weather in May gave the crop a further setback. The second crop started well but suffered from lack of rain in August and September, but prospects improved considerably with the arrival of rain in October. However, despite the difficult weather conditions the average yield of green leaf went up from 1,932 lbs. to 2,194 lbs. per acre and the percentage of Grade I increased from 66 per cent. in 1952 to 76 per cent. in 1953. The total acreage was 625 compared with 615 in the previous season. The varieties grown were Bonanza and Harrison's Special. Of the cured leaf 44 per cent. was classified as "brights".

In north-west Lango, where tobacco was grown for the second season, the acreage increased from 17 to 51 acres. Many growers were new to the crop and the standard of nursery and field work left a lot to be desired. Both the growth of the tobacco in the field and the cured leaf

have, however, been very favourably reported on by a competent observer.

Production figures for the province were:—

Area	Acreage		Green Leaf lb.	
	1953	1952	1953	1952
West Nile ..	1,256	1,037	2,769,554	1,501,108
Acholi ..	625	615	1,368,916	1,188,449
Lango ..	51	17	162,674	61,822
	1,932	1,669	4,301,144	2,751,379

Prices paid for the three grades were 7, 5 and 3 cents as in 1952. The total value of the crop to the growers was £12,983.

COFFEE

There was a keen demand for coffee seedlings from the three nurseries in the West Nile highlands, but very little attention was paid to weeding established coffee. Production amounted to 1,194 lbs. of clean coffee. Distribution of seedlings will continue in 1954.

OILSEEDS

There were no recorded sales of groundnuts, simsim or shea butter-nuts. The acreage under sunflower in West Nile decreased slightly, 980 acres being planted as compared with 1,016 in 1952 and 522 acres in 1951. The crop totalled 289 tons and the price to the growers was 15 cents per lb. In 1952, 385 tons were purchased.

SPECIAL DEVELOPMENT SECTION

By R. K. KERKHAM, *Assistant Director of Agriculture*
(*Special Development*)

SUMMARY

An outline of staff employed by the Special Development Section and the main lines of work is given.

Economic conditions during 1953 were substantially unchanged insofar as the farmer is concerned. The relaxation of controls improved prices of certain subsidiary crops.

Staff training is an important activity of the section. Considerable improvements have been obtained from the appointment of additional agricultural staff. Improvement in mechanical staff is slow.

Group farming activities have expanded, particularly in Buganda, Acholi, Lango and Bunyoro.

Considerable attention has been paid to the adoption of farming systems which are required by mechanisation. Two small experimental management farms have been opened.

Though cotton remained the most important crop grown by mechanised farmers and labour required for this crop at the time of harvesting limits acreages cultivated, increasing attention is being paid to tobacco, maize, eleusine millet, sunflowers, soya beans and groundnuts as crops grown in rotation with cotton.

The two development farms in Busoga and Bunyoro have continued a full programme of work. In both cases sufficient land has been opened to justify paying full attention to efficiency and costs of farm operations so that eventual financial success may be assessed. In both cases consideration is being given to starting tenant farming or group farming schemes so as to spread capital and supervisory skills available over a greater area of production.

Tractor contract work to peasant farmers has been expanded slightly, but main attention is now being paid to increased supervision of existing units, and working out systems of tractor use by farmers which will give them the best chance of employing them with profit.

STAFF AND MAIN LINES OF WORK

Projects in which the Special Development Section was concerned remained, in general terms, very similar to those of the previous year and consisted of the development farms in Busoga and Bunyoro and contract schemes in Buganda, Lango, Acholi, Toro, Teso, Busoga and Bunyoro.

An Agricultural Economist on the staff of the Faculty of Agriculture of Makerere College was transferred to the section for one year from the 1st April. He carried out an investigation of the effect of mechanisation on farming systems in south Kyagwe and will present a report on his investigations in due course. He has also undertaken collation and analysis of tractor costing records for Buganda. This has not yet been written up in full, but the main results of the year's accounts have been available for use when writing this report.

A new management experimental farm was started at Senge, near to Kawanda, and work was considerably expanded at Butasindirwa in Singo.

ECONOMIC CONDITIONS

Economic conditions in Uganda insofar as they affect the adoption of mechanisation were little changed during 1953. There was a heavy demand for use of tractors in all maize growing areas early during the year owing to high prices anticipated by growers. Cotton prices were little changed. In Acholi and Lango the spread of tobacco cultivation to new areas undoubtedly made the use of machinery more popular. Though world market prices of subsidiary crops, such as groundnuts and sunflowers, dropped considerably during the year, the prices paid to farmers in this country tended to increase rather than decrease.

Farmers in Buganda continued to make considerable use of the facilities for credit provided by the Credit and Savings Bank, but few farmers in other areas were able to make use of the bank. The Buganda

Co-operative Union provided short term credit for one or two societies and this undoubtedly helped them to increase their production by use of machinery.

Labour rates rose slightly during the year but not to an extent sufficient to make a major change in the relative costs of machinery and hand labour for farm operations.

Prices of agricultural machinery, fuel and spares remained fairly steady, at a level similar to that met with in 1952.

STAFF TRAINING

Additional trained agricultural mechanics have joined the section after completing a technical school training. Short courses were arranged for tractor drivers at Ngetta towards the end of the year. There has probably been some slight improvement in the general standards of tractor drivers' and tractor mechanics' work, but progress is still slow in our contract schemes. On the development farms there are clear signs that the standard of work obtained from our drivers and mechanics is now very much higher than was the case two or three years ago.

The work on the three small experiment farms run by this section in Buganda has been very much improved since two additional assistant farm managers were appointed early in 1953. Additional learners are being trained for this work.

VISITORS

The visit of the East African Royal Commission stimulated members of this section of the department to consider what we are trying to do and assess results of what has been done so far. Several members of the Commission had had considerable experience of similar projects in other parts of the tropical empire and were able to give us very valuable advice.

The Technical Secretary of the Colonial Agricultural Machinery Advisory Committee also visited Uganda during the year. This organisation is in a position to make very useful suggestions for adaptations and improvements to machinery to suit the requirements of Uganda farmers. The visit showed us that many of our problems are met with in other colonies and indicated that pooling of knowledge and experience should have very real benefits to all these territories.

GROUP FARMING

The tendency noted last year for adoption of mechanisation and other forms of commercialisation of farming, to encourage group farming, has been continued. A conference was held at Ngetta in October at which problems of groups farming were discussed. In Acholi, several groups are now approaching a size where one group requires the full time use of one tractor. In Ssinga County of Buganda, by the end of 1953, four co-operative societies had started farming activities as a society, as well as marketing their produce jointly. A number of other societies in this area propose to

start in 1954. In all cases, these societies lease land or are considering leasing land, as a society with leases of six to twenty years' duration. In Lango, two societies started as farming societies have been registered as co-operative societies during the year. In Bunyoro, contract tractor work was started very largely as the result of pressure from the Co-operative Officer stationed in that district, and nearly all work done has been for societies.

A number of cases have been noted where societies have tended to grow too large an acreage on one farm. In most cases members continue to farm their own land near their own homes as well as having an interest in the co-operative farm. Undue concentration of work on one farm leads to long journeys from home to work. It also involves members entrusting their money and supervision to a leader who is not a member of their own village community. Running of farms in units of ten to thirty acres per field, with a local leader on each farm, appears to present the best chance of obtaining efficient work and leadership without any considerable reduction in tractor efficiency, provided there is a sufficient concentration of fields of this size in one locality.

In south Kyagwe and Kyadondo contract work has been done mainly for individual farmers. Operating costs have been higher in these areas than where work has been done for groups, owing to the smaller average size of farm and increased supervision charges. A number of farmers have now used tractors for several years on farms of 10 to 20 acres and have evolved a farming system which is producing fair profits. Such farmers are in nearly all cases landowners, and there is no reason to suppose that this type of farming will not be as successful as group farming in areas where land is owned individually.

AGRONOMY

Experience during 1953 has emphasised the fact that the most important factors limiting adoption of mechanisation by Uganda farmers are social and agronomic rather than mechanical. Choice of machinery best suited to local conditions requires trials over many years, but equipment manufactured for temperate climate conditions can readily be adapted for use in Uganda. Training of mechanics and drivers to make the best use of machinery is a much slower and more difficult problem. Training of farmers and supervisors to utilize machinery in the most economical way and to adapt their system of farming to its use is our most difficult problem. The two new Management Experimental Farms opened at Senge and Butasindirwa in Buganda, combined with experience obtained on Busoga Farms and the Bunyoro Agricultural Company at Kigumba, now provide very useful information about methods of cultivation and cropping in relation to utilization of machinery and hand labour. At Kigumba, the peak labour requirements of the tobacco crop set the pattern for cropping the remainder of the farm. Elsewhere, the labour required for picking and sorting cotton is normally the limiting factor; rotations must be framed so as to make the maximum use of this peak labour require-

ment throughout the remainder of the year. In Buganda, tractor use has in many cases been associated with maize production as the main farming enterprise. This system is almost certainly wasteful of land and labour, and the probability that maize prices will drop in 1954 has had a desirable effect in making farmers consider production of alternative crops such as groundnuts, sunflowers, soya beans and millets. Adoption of any system of farming which involves paying out considerable amounts of cash in order to produce a crop is, however, comparatively new even in Buganda. Soil conditions vary from village to village, and from field to field on each farm. Climatic conditions vary just as much. No general recommendations are valid for even one district. In the long run, farmers must be trained to make their own decisions. Results from the Development Farms and Management Experimental Farms are providing facilities for training of staff who can discuss farmers' problems with them and give them useful advice.

Cotton.—Cotton remains the most important crop grown by farmers who use machinery. Labour requirements for picking and sorting remain the main factor limiting production, and in few areas can more than one acre per man available at harvest be handled effectively. On Busoga Farms, use of casual labour for picking has put this figure up to $1\frac{1}{2}$ acres, but all casual labour is fully engaged in most areas at the cotton picking time. Use of tractors for land preparation and planting has undoubtedly increased yield per acre by allowing planting at a time when maximum yield per acre can be obtained, which also tends to reduce labour required per pound picked. In co-operation with the Entomological Section, spraying cotton against *Lygus* was tried in Acholi, Lango, Bunyoro, Buganda and Busoga, but yield was not increased appreciably anywhere in 1953. With heavy late rains unsprayed cotton made a good recovery from *Lygus* damage, but this was also associated with a high "fifi" percentage due to bollworms, late blackarm and stainers; on Busoga Farms the daily sorting task was 140 lbs. of seed cotton only.

On Busoga Farms, effective mechanical weeding was done with a combination of double mouldboard ridger and disc ridger. This may have been economically justified as labour was fully engaged on work with other crops. Farmers elsewhere, who used machinery for land preparation and planting, weeded their cotton by hand.

Tobacco.—Tractors were used in Acholi, Lango and Bunyoro for preparation of land for tobacco. At Kigumba, a disc ridger was used successfully for ridging before planting. All subsequent field operations were done by hand, though tractors were used for transport of leaf from field to barn at harvest. The main value of the tractor is assistance in getting land prepared in good time so as to allow early planting, which gives the highest yield.

Maize.—Use of machinery undoubtedly made an appreciable contribution towards production of a record maize crop in Buganda and Busoga in 1953. The Department's contract work had some effect, but

production by private tractor owners was more important. Buganda farmers have found that they can grow crops of seven to ten bags per acre by employing one man to four or five acres provided they utilise about five tractor hours (say, Shs. 80 to Shs. 100) per acre on thorough land preparation.

Eleusine Millet.—The Bunyoro Agricultural Company has found this crop a profitable sideline on a farm where tobacco is the main crop. Production was completely mechanised, harvesting being done with a Massey-Harris 726 combine. Crops were grown in both the early and late rains, which produced grain yields of 1,000 lbs. and 800 lbs. per acre. A ready market has been found at Shs. 50 ex farm per 200 lb. bag. Demand for this millet as food by institutions and by the people of Lango, where crops have been poor for several years, provided the bulk of the demand.

At Serere, this crop was successfully harvested on a Massey-Harris Clipper combine. On Busoga Farms, the same combine was used with less success owing to higher humidity at time of harvest.

A few farmers in Lango and Acholi grew this crop for sale without having access to a combine. In general, high labour requirements at harvest make its production as an economic crop impossible unless a combine is available.

Coffee and Bananas.—High returns from these crops justify use of machinery for preparation of land for new planting. Mechanised weeding has not been successful.

Sunflowers.—On development farms and in Ssinga County of Buganda increasing interest was taken in this crop. Returns per acre are at present Shs. 150 to Shs. 200 per acre only, but costs are low. A hand operated winnower which costs about Shs. 1,000 has obviated the need for hand winnowing which was previously a deterrent to growth of this crop. At Kigumba, it has been found that stooking some time before the crop is ready for harvest avoids bird damage, which was previously serious in many areas.

Soya Beans.—More interest is being taken in this crop following increase in price due to removal of controls.

Groundnuts.—Following removal of controls and consequent price increase more interest is also being taken in this crop, but few mechanised farmers grew appreciable acreages owing to high labour requirements at harvest. Experimental work has shown that reasonable yields can be obtained when planted in 28-inch rows with a close spacing in the row. Suitable implements are now available for planting, weeding and lifting. Attention will be paid to mechanical picking.

Beans.—Beans, grams and cowpeas are grown by development farms and farmers interested in mechanisation, but in no case have they proved worth considering as a major crop. Erratic markets combined with poor keeping qualities are the main deterrents.

Root Crops.—Attempts to grow sweet potatoes as an important crop on Busoga Farms have been unsuccessful and have been discontinued. A few Baganda farmers who were interested have also had little success.

MACHINERY AND FARM OPERATIONS

Land Clearing.—Little new information has been obtained about land clearing during 1953. At Kigumba, a D.6 Caterpillar was purchased to replace the D.4 Caterpillar for heavy clearing. Costs of hand clearing were determined at Senge and Butasindirwa. Tractor operating costs have been very much raised by high puncture rate and plough breakages in all contract work.

1953 experience indicates that clearing costs are nearly always increased by attempts to clear land quickly. In most areas it is desirable to fell by tractor or winch and allow fire or ants to get rid of most of the vegetation.

In few parts of Uganda can land be cleared to a degree suitable for tractor operation for less than Shs. 150 per acre. Where trees are fairly dense the cost is likely to be Shs. 200 to Shs. 300. When tree size or tree density is sufficient to cost more than Shs. 300 per acre, the chances of crop returns being high enough to justify clearing are poor.

Land Preparation.—The major work for which tractors are required at present in Uganda is for land preparation. The choice of tractor type is therefore very largely dependent upon their efficiency for this work.

For clearing new land on large farms there is little doubt that track-layers with heavy trailer disc ploughs are most suitable, but they are not suited to work on small farms with limited mechanical supervision. Half tracks have been tried but are being converted to rubber tyred wheels owing to high maintenance charges.

Steel wheels are preferred by most Baganda who own tractors, but are not suited to contract work.

The main types used during 1953 were:—

(a) Fordson Major with Perkins P.6 diesel engine using trailer disc ploughs. (Busoga Farms and contract work in Buganda, Bunyoro and Busoga).

(b) Fordson Major with kerosene engine and trailer ploughs or the Fordson mounted plough. (Contract work in Buganda and Teso).

(c) New Fordson with diesel engine and Fordson mounted plough. (Bunyoro Agricultural Company Limited).

(d) New Fordson with kerosene engine and Fordson mounted plough. (Contract work in Buganda).

(e) Ferguson with mounted two disc plough. (Bunyoro Agricultural Company Limited, Busoga Farms, contract work in Acholi, Lango, Toro and Buganda).

(f) Farmall M with H.M.150 semi-mounted plough. (Contract work in Buganda).

(g) Massey-Harris 744.D (diesel) with trailer ploughs. (Bunyoro Agricultural Company Limited).

Full records of the performance of these tractor types have been kept, and it is now possible to give useful advice to prospective purchasers in accordance with local conditions.

For the final operation before planting, disc tillers, disc harrows and rotary hoes have been used. Though rotary hoes are most effective on certain heavy soils of Buganda and Bunyoro, tillers and harrows have been found cheaper to operate and preferable on most soils.

Planting.—Satisfactory results have been obtained with two and four row planters for maize, cotton, soya beans, sunflowers and sorghum. For eleusine millet certain force feed drills have given good results, and seeder cans on a toolbar have been used satisfactorily.

Transplanters so far tried have not proved economical with tobacco or sweet potatoes.

Weeding.—On development farms weeding has been most satisfactorily done with a mid-mounted bedder weeder, and with a disc ridger. Elsewhere, farmers consider hand labour more economical.

Harvesting.—Eleusine millet, and just possibly sorghum, are the only crops grown in Uganda for which combine harvesters are preferable to hand harvesting. Increased attention has been paid to hand shellers, decorticators and winnowers.

DEVELOPMENT FARMS

Bunyoro Agricultural Company Limited.—This development farm has continued a full programme of farming and land clearing, and more than 1,000 acres had been cleared by the end of the year.

Climatic conditions during 1953 were favourable. Total rainfall recorded was 51.21 inches, and the distribution was good.

Tobacco was the most important crop grown. 137 acres were grown on the farm and tenants grew about 20 acres of tobacco for sale as green leaf. The farm's accounts for the year are not yet available, but there is little doubt that a fairly large loss will have been made from tobacco. The main cause was late planting combined with incorrect methods of handling in the field. Late planting was due to failure of the main water supplies for seed beds. This has now been corrected by putting in additional boreholes and two dams. The field handling troubles were mainly concerned with correct stage for topping and desuckering on the heavier soils. By the end of the season a satisfactory method of handling had been

evolved, and the manager is satisfied that he can produce a profitable yield of fair quality leaf in future. Average receipts in 1953 were Shs. 2/50 per pound of cured leaf compared with Shs. 2/05 in 1952, but the yield per acre was reduced owing to the high proportion of leaf harvested which had to be discarded as incurable.

The main variety grown was Yellow Mammoth. This variety is best suited to sandy soils and did not do well on the heavier soils at Kigumba. A number of other varieties were tried, of which Harrison Special is the most promising.

Fertiliser experiments showed some responses, but did not indicate that heavy use of fertilisers would pay.

Additional curing barns were completed which contain certain modifications made after a visit by the manager to Southern Rhodesia.

The main feature of the cropping programme for other crops was an attempt to fit the programme into a system which requires all available hand labour to work on the tobacco crop during the harvesting and grading period, i.e., July to September. It has also been desirable to concentrate attention on one main crop per year on each field. Previous attempts to grow two main crops per year have caused very expensive attempts to hurry harvesting and land preparation, and in some cases planting crops too late to give a chance of getting good yields. With most crops at Kigumba early planting in the second rains gives rather lower yields than early planting in the first rains, but more reliable harvesting conditions make the second rains crop more profitable. This was emphasised in 1953, when late rains continued till the end of November.

ACREAGES (KIGUMBA)

First Half Year, 1953

Crop	Acres	Yield per Acre
		<i>lb.</i>
Tepary Beans	14	212
Haricot Beans	23	159
Banja Beans	57	140
Bulo	48*	1,047
Soya Beans	20	532½
Groundnuts	41½	419
Green Gram	7	143
Sorghum	57	996
Maize	206†	
Tobacco (Planted April-July) ..	137	

*40 acres laid and not harvested owing to shortage of labour.

†Planted 1st and 2nd half year. At least 130 acres seriously affected by baboon and theft. Remainder partially affected. 765 lb./acre average yield on unaffected areas.

Second Half Year, 1953

Crop	Acres	Yield per Acre
		<i>lb.</i>
Tepary Beans	22	390
Banja Beans (interplanted in Ground-nuts)	25	51
Canadian Wonder Beans	2·21	810·13
Bulo	78	739
Groundnuts (very poor stand)	32	208
Green Gram	13	34
Sorghum	39	794
Sunflower	18	529

Maize.—Crops were fair. Serious damage was done by theft, baboons and termites. Harvesting the first rains crop tends to clash with the peak tobacco labour demands.

Groundnuts.—Results have been unsatisfactory so far. A satisfactory planter was not obtained until the end of 1953. High humidity in July and August made harvesting of the first rains crops difficult.

Eleusine Millet.—Satisfactory crops were obtained in both the first and second rains. Harvesting was done by combine and labour requirements were low. Lodging, due to excessive plant population, reduced yields on part of the first rains crop.

Beans.—Yields were poor. The crop is only worth growing at Kigumba to feed labour. A new introduction of Canadian Wonder seed from Arusha gave a yield of 810 lbs. per acre on a two-acre plot and this variety appears promising. Results with green gram and soya beans were also unsatisfactory.

Sorghum.—Yields were fair, in most cases over 1,000 lbs. per acre. Bird damage was the main trouble. The second rains crop was harvested with a self-propelled combine. Acreage grown is limited by the unreliability of the market for this crop.

Sunflower.—Satisfactory results were obtained from the small acreage grown. Stooking in the field appears to have solved bird damage troubles.

Cotton.—Farm porters hired some land to grow cotton. Yields again were poor, and the crop is not worth growing at Kigumba until disease and insect damage can be controlled.

BUSOGA FARMS, BUNYA

Climatic conditions were most unfavourable during the first part of the year, total rainfall during the period January, 1953, to August, 1953, being less than 20 inches. Good rains fell from September to December and second rains crops did fairly well.

Crop	1ST RAINS		2ND RAINS		Total Acreage
	Acres	Yield per Acre	Acres	Yield per Acre	
Cotton	—	—	100	600 lb.	100
Maize	215	7-8 bags	65	3 bags	280
Sunflowers	151	403 lb.	33	Very poor	184
Beans	96	204 lb.	53	474 lb.	149
Soya Beans	4	723 lb.	36	780 lb.	40
Sorghum	23	593 lb.	71	800 lb.	94
Sorghum (ratoon)	93	530 lb.	—	—	93
Eleusine Millet	40	1,200 lb.	—	—	40
Groundnuts	30	450 lb.	—	—	30
Sunn Hemp	10	200 lb.	30	100 lb.	40
Sweet Potatoes	22	*			
Cassava	16	*			
TOTALS	700		388		1,088

Yields in pounds of grain or shelled seed per acre in each case.

*Harvesting not completed.

About 22 acres of sweet potatoes and 16 acres of cassava were also grown and used mainly for cattle feed.

Land cropped with maize in the first rains was left fallow in the second rains.

Cotton.—Yield was higher than had been the case in 1951 and 1952. Planting took place during the last week of June and first week of July. Dry weather during July and August stunted early growth. It also reduced weeding costs. Late rains brought the crop on well, but incidence of pests and diseases was high. This was reflected in high sorting costs and high percentage of "fifi" cotton. Part of the crop was sprayed against *Lygus* in co-operation with the Senior Entomologist, but little benefit was obtained. Experience over three years now suggests that disease and insect attack in large blocks of cotton must be expected to be higher than under peasant farming conditions. It will be desirable to consider late spraying to reduce attack by bollworms and other insects.

Maize.—In view of low rainfall, maize yield was satisfactory. Planting and weeding were carried out efficiently at a fairly low cost. Several methods of harvesting were tried. Stooking followed by storage in a crib appears to be necessary in order to reduce moisture content to a satisfactory level in this area.

Sunflowers.—The crop in the first rains came away well but yields were reduced by lack of rain at the time of flowering. The second rains crop was on acid swamp side soils, but the main reason for poor yield was bird damage at harvest time. Threshing and winnowing was expensive, mainly because conditions were damp and humid at the time.

Beans.—One field of 13 acres gave a yield of 750 lbs. per acre. Other yields were low. Harvesting methods so far used have not been satisfactory, and acreage is being reduced.

Soya Beans.—Soya beans did well in 1953. Depth of planting appears to be most important. The main crop grew luxuriantly and no major weeding troubles occurred. The crop was stoked before it was ripe and threshed by hand. With recent increases in price, soya is considered a useful crop for this locality.

Sorghum.—Mwenge beer types were grown. Yields were satisfactory in view of the unfavourable climatic conditions. During the second half of the year difficulty was encountered in obtaining a satisfactory market for this crop, due mainly to shortage of "mbide" bananas which are used with sorghum to make "mwenge" beer. Reports suggest that many Baganda and Basoga now drink "kwete" beer instead of "mwenge"; "kwete" is made from maize meal, sugar and eleusine millet, not with sorghum.

Eleusine Millet.—The farm's combine was not in good order and some of the crop was harvested by hand. Combining direct in the field is not easy on Busoga Farms unless conditions are exceptionally dry. This crop found a ready market at Shs. 50 per bag.

Groundnuts.—The crop was poor owing to bad germination. Rains at germination were erratic and some seed rotted in the ground.

Sunn Hemp.—Much of the crop was lost in a hailstorm at the time of harvest. A ready market is available on sugar estates for seed at 45 cents per lb.

Livestock.—Sufficient tsetse flies still occur on Busoga farms to ensure a 100% infection of cattle with trypanosomiasis. The Veterinary Department has continued to inoculate with antitrypanicide once per month. Calves are now run with their dams during the day, and cows are milked in the morning only. Condition of the cattle has been fairly good throughout the year. At Christmas five bullocks were slaughtered, which included two bullocks born on the farm in 1950. There were 51 cattle in the herd on 31st December (2 bulls; 18 cows; 7 heifers; 5 bullocks; 19 calves).

Sheep have once again not thrived. The Veterinary Officer found that they were infected with trypanosomiasis, and this disease may have been partly responsible for poor condition and deaths. There were 97 sheep in the flock on 31st December. The farm also had 29 goats at the end of 1953: they do not appear to have suffered as much from trypanosomiasis as the sheep.

General.—Owing to heavy financial losses incurred in 1952, the Busoga Farms Board was instructed in April, 1953, to slow down bush clearing activities, and to concentrate attention on farming land already cleared. An interim balance sheet drawn up for the period January to September, 1953, again disclosed heavy losses. Though unfavourable weather was a subsidiary cause it was apparent that returns obtained from the main crops grown on Busoga Farms do not justify the high bush clearing costs and supervisory charges incurred. Some reduction in the degree

of mechanisation was also considered necessary. The Board was instructed to consider setting up a group farming scheme to be run on land allocated for the use of Busoga Farms.

TRACTOR CONTRACT SCHEMES

Tables I and II show machinery in use and work done in the main areas.

Tractor hire rates were increased slightly from the 1st of January, 1953. In Buganda, Busoga and Bunyoro the ploughing charge was from Shs. 32 to Shs. 48 per acre and in Acholi, Lango, Teso and Toro from Shs. 28 to Shs. 40 per acre. An analysis of 1952 costs showed that rates are still considerably below costs of a well-managed, efficient organisation and increases of approximately 50% in basic rates have been enforced from 1st January, 1954.

An unsatisfactory feature of this year's work has been increasing evidence that drivers and other subordinate staff have engaged in "private" work, and that revenue has gone astray. In some cases they have done this in collusion with farmers. One supervisor and several drivers have been convicted for offences of this nature. The long-term solution is to make farmers realise that they pay for such misdemeanours in higher tractor hire rates, and to make them assist us with supervision. In the meantime, supervisory staff is being increased and various checks on records instituted.

A detailed analysis of tractor operational costs and receipts has been carried out by the Agricultural Economist seconded to the department from Makerere College. Costs in Lango/Acholi and Bunyoro have also been analysed. The general conclusion is that on 1953 rates charges have just about covered running costs, i.e., fuel and oil, drivers and spares and repairs, in the more efficient areas. Within these areas charges have covered part of the depreciation costs on the more efficient tractors. The analysis has been done by tractor types and by areas.

In general, diesel tractors on contract work proved more expensive than petrol or kerosene driven tractors, though not on farm work where regular daily supervision by competent mechanics is available. This reverses results obtained in 1951 and 1952. Very heavy charges have been met for major overhauls to diesel tractors; repairs to injectors have also been expensive owing to difficulty in insisting on use of clean fuel.

Replacement and repairs to tyres have been a major item of repair charges in all areas. Tyre type and tractor type have a considerable influence on puncture rate, but insistence on more efficient stumping is the only eventual solution. Attempts to avoid breakages by use of iron wheels or track vehicles introduce higher tractor running costs and high plough breakages.

CONCLUSION

Experience gained in 1953 has emphasised the fact that changes from a primarily subsistence economy, or from a subsistence economy incorporat-

ing production of cash crops by family labour plus some hired hand labour, to an economy incorporating a high degree of commercialisation cannot be carried out rapidly with success. In few cases do returns obtained from farming allow a margin of profit which will pay for a high degree of mechanisation or high supervisory expenses. Knowledge and experience are gradually being accumulated which allows farmers to make the maximum use of their resources. Cropping practices and farm layouts have been adapted to use of machinery, but there are few answers which have more than localised application. Operative skill and efficiency improve slowly, but very high operating costs have been incurred wherever expansion has been made at a rate which entails inadequate supervision.

The development farms have tackled the problem of mechanisation and commercialisation from a different angle. In theory, they have adequate supplies of capital and skill. Their balance sheets for 1953 will indicate however that farming in Uganda, with the exception of farming a few specialised crops which happen to be experiencing a period of very high prices at present, does not readily carry high supervisory costs. Both development farms are now considering embarking on group farming schemes, which should spread supervisory expenses over larger acreages.

TABLE I
TRACTOR LOCATIONS
Special Development Section, 1953

District	Fordson Major Perkins Diesel Engine	Fordson Major Kerosene Engine	New Fordson Kerosene Engine	Ferguson Petrol and Kerosene Engines	Farmall M	TOTAL
Buganda ..	12	8	1	3	1	25
Bunyoro ..	2	1	—	1	—	4
Acholi/ Lango ..	2	—	—	7	—	9
Toro ..	—	—	—	3	—	3
Teso ..	—	2	—	—	—	2
Busoga ..	2	—	—	—	—	2
TOTAL ..	18	11	1	14	1	45

The Buganda tractors include six Fordson diesels and one Ferguson purchased by the Buganda Government. Two of the kerosene Fordson Majors are more than five years old, did little work and will be written off. The Bunyoro tractors were stationed in that district for about six months only.

The four Bunyoro tractors worked for three months in Acholi/Lango.

One of the Toro tractors belongs to the Toro African Local Government.

The two tractors in Busoga worked for half the year on contract work.

TABLE II
SUMMARY OF TRACTOR WORK: AGRICULTURAL DEPARTMENT, SPECIAL DEVELOPMENT SECTION: CONTRACT WORK

Area	Plough			Rotavator, Disc Tiller, Disc Harrow			Planter and Drill			Hired Transport	Other Operations	Opera- tional Transport	Total Hours Worked
	Hr.	Ac.	Hr./Ac	Hr.	Ac.	Hr./Ac	Hr.	Ac.	Hr./Ac	Hr.	Hr.	Hr.	Hr.
Buganda—													
South Kyagwe ..	1,366	529	2.58	253	202	1.25	44	56	0.79	189	28	700	2,580
Singo ..	1,046	525	1.99	209	194	1.08	173	208	0.83	23	2	106	1,559
East Kyadondo ..	1,138	414	2.75	170	68	2.47	39	32	1.21	155	50	77	1,629
West Kyadondo ..	1,092	384	2.84	284	142	2.00	31	24	1.29	Nil	8	75	1,490
Mawokota ..	874	375	2.33	33	12	2.73	12	18	0.67	Nil	Nil	44	963
North Kyagwe ..	117	70	1.67	Nil	Nil	—	Nil	Nil	—	3	Nil	24	144
Bulemezi ..	827	268	3.09	299	138	2.17	3	3	—	Nil	Nil	46	1,175
TOTAL BUGANDA	6,460	2,565	2.52	1,248	756	1.65	302	341	0.89	370	88	1,072	9,540
Bunyoro ..	701	259	2.71	152	114	1.34	Nil	Nil	—	Nil	Nil	172	1,025
Acholi/Lango ..	5,057	1,747	2.89	526	280	1.88	46	43	1.07	762	49	680	7,120
Toro ..	543	147	3.69	327	128	2.55	—	—	—	—	—	193	1,063
Teso ..	397	154	2.58	34	22	1.55	10	18	0.55	—	—	76	517
TOTAL DEPARTMENTAL CONTRACT WORK	13,158	4,872	2.70	2,287	1,300	1.76	358	402	0.89	1,132	137	2,193	19,265
Busoga: Contract work done by Busoga Farms	582	262	2.22									23	605

UGANDA RAINFALL, 1953

Station	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
ARUA ..	Total: ins.	2.38	1.60	4.27	5.96	10.18	4.58	6.16	3.08	11.53	4.78	0.12	54.90
	Days	6	5	11	16	18	9	19	14	19	13	2	134
	Means: ins.	0.73	3.31	5.37	5.67	4.45	6.06	7.49	6.63	6.87	4.00	1.79	54.22
GULU ..	Total: ins.	0.87	0.32	5.39	6.22	6.24	6.16	8.26	3.26	10.09	5.19	0.65	54.59
	Days	3	2	15	16	16	16	18	14	16	16	6	145
	Means: ins.	0.40	1.80	6.75	7.91	5.82	6.70	8.80	6.86	—	3.79	1.74	53.93
LIRA ..	Total: ins.	2.51	—	12.82	5.66	10.04	4.80	5.99	2.48	12.85	6.38	0.85	65.24
	Days	3	—	15	10	9	9	8	4	13	8	4	86
	Means: ins.	0.75	1.50	6.72	7.40	4.57	5.89	10.08	7.84	5.10	3.47	1.63	59.15
MOROTO ..	Total: ins.	—	—	6.44	3.22	7.95	1.91	2.78	0.77	3.60	0.62	0.65	28.77
	Days	—	—	10	5	12	6	9	4	6	4	2	60
	Means: ins.	0.28	1.25	4.83	6.01	3.35	5.72	4.28	2.11	1.81	1.80	0.92	35.02
HOIMA ..	Total: ins.	2.07	2.54	6.72	3.67	—	1.76	6.15	4.59	8.64	4.25	1.60	44.26
	Days	5	4	15	13	—	8	17	10	17	11	6	113
	Means: ins.	1.20	2.85	6.73	5.91	3.51	3.95	5.88	7.02	6.99	5.23	2.43	56.35
SOROTI ..	Total: ins.	2.03	—	9.32	5.16	5.22	4.80	7.93	2.82	6.95	2.71	2.22	49.58
	Days	3	—	19	10	12	14	18	6	16	8	6	115
	Means: ins.	0.73	2.07	7.11	7.64	4.96	4.72	6.99	5.53	4.50	2.92	1.23	51.46
FORT PORTAL	Total: ins.	3.10	3.10	6.69	4.19	9.97	2.08	3.03	7.34	7.96	9.05	3.21	65.50
	Days	8	9	19	17	17	5	17	17	27	26	14	197
	Means: ins.	1.22	2.93	7.33	5.65	3.06	2.25	4.65	7.48	8.28	6.40	2.80	57.40
KAKUMIRO	Total: ins.	0.96	2.19	5.61	2.59	6.49	2.09	6.35	2.91	5.04	7.85	3.56	50.35
	Days	7	4	13	14	13	10	17	11	18	17	8	142
	Means: ins.	1.38	2.34	6.74	3.96	2.71	2.61	5.38	6.74	7.33	5.51	2.56	51.89

APPENDIX I—continued.

Station	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
KAMPALA	Total: ins.	1.29	2.31	5.44	2.41	6.66	0.56	2.65	4.51	7.43	5.07	3.55	44.84
	Days	5	11	21	13	13	5	12	11	15	16	2	136
	Means: ins.	2.25	4.62	7.38	5.66	2.77	1.98	3.36	3.77	4.08	4.64	3.78	46.28
JINJA	Total: ins.	0.65	2.71	11.38	3.32	2.20	2.09	1.18	3.85	3.46	7.06	2.14	43.55
	Days	4	10	20	15	12	6	10	11	16	20	10	141
	Means: ins.	—	—	—	—	—	—	—	—	—	—	—	—
TORORO	Total: ins.	0.46	1.92	8.46	5.32	2.06	3.49	4.21	—	4.06	5.26	2.79	39.17
	Days	2	6	21	16	10	9	18	—	13	20	10	129
	Means: ins.	2.81	5.62	8.34	8.59	4.44	4.39	4.81	3.93	4.64	3.90	2.68	55.92
MBARARA	Total: ins.	0.85	4.18	7.27	2.08	3.13	0.02	1.40	5.21	5.24	6.58	0.68	38.07
	Days	4	14	21	8	8	1	5	15	15	22	6	127
	Means: ins.	2.45	3.78	4.70	3.03	0.94	0.85	2.50	3.83	4.12	4.59	2.87	35.21
MASAKA	Total: ins.	2.07	2.44	4.64	2.95	1.84	0.30	1.99	2.82	5.81	3.87	3.30	33.17
	Days	7	8	19	10	6	2	5	9	12	13	7	103
	Means: ins.	2.46	4.51	7.03	6.91	1.79	1.46	2.15	3.48	3.85	3.84	3.33	42.86
KABALE	Total: ins.	1.23	7.63	7.83	2.09	2.88	0.15	1.38	5.92	1.40	6.34	1.57	41.70
	Days	6	20	20	13	9	1	5	11	8	24	8	133
	Means: ins.	3.51	4.67	5.15	3.69	0.99	0.82	2.09	3.85	3.94	4.12	3.28	38.45
ENTEBBE	Total: ins.	1.24	6.19	10.57	5.84	2.46	2.24	0.51	10.79	5.97	6.59	3.46	57.28
	Days	6	14	24	17	7	8	4	14	16	20	17	151
	Means: ins.	3.62	6.26	10.45	11.55	4.19	2.82	3.85	3.15	3.89	5.24	5.27	62.94

COTTON PRODUCTION—1952-1953 SEASON

PROVINCE AND ZONE	ACREAGE		SALES IN TONS		YIELDS PER ACRE LB.	
	Totals	Means	Totals	Means	Totals	Means
	1952-53	1946-53	1952-53	1946-53	1952-53	1946-53
<i>Buganda—</i>						
Mengo	267,283	324,901	47,616	58,640	399	404
Masaka	27,880	40,789	4,438	7,308	356	401
Mubende	46,494	59,416	7,969	10,777	384	406
TOTALS ..	341,657	425,106	60,023	76,725	394	404
<i>Eastern—</i>						
Busoga	288,350	244,781	48,801	37,315	379	342
North Mbale ..	176,490	155,579	17,827	14,391	226	207
South Mbale ..	141,835	135,344	12,238	11,125	193	184
South Teso ..	71,973	59,445	6,512	4,919	203	185
South Teso Segregated ..	36,411	32,946	4,520	3,750	278	255
North Teso ..	55,564	45,789	5,571	3,508	225	172
Usuku	14,649	14,934	2,777	1,658	425	249
TOTALS ..	785,272*	688,818	98,246†	76,666	280	249
<i>Western—</i>						
Bunyoro	24,972	24,208	4,140	3,417	371	316
Toro	28,112	19,676	2,359	2,166	188	247
TOTALS ..	53,084	43,884	6,499	5,583	274	285
<i>Northern—</i>						
Lango	166,948	160,361	13,703	14,441	184	202
East Acholi and Karamoja	35,016	33,292	3,355	3,819	215	257
West Acholi ..	34,966	32,910	4,385	3,984	281	271
West Nile	55,610	43,609	4,484	4,130	181	212
TOTALS ..	292,540*	270,172	25,927†	26,374	199	219
PROTECTORATE TOTALS ..	1,472,553	1,427,980	190,695	185,348	290	291

*These figures do not agree with Provincial totals as shown in Tables III (a), III (c) and III (e) due to the fact that the boundaries of the Zones listed under Eastern and Northern Provinces do not coincide with Provincial boundaries. The difference is compensating and the Protectorate totals in Tables II (a) and III (a) agree.

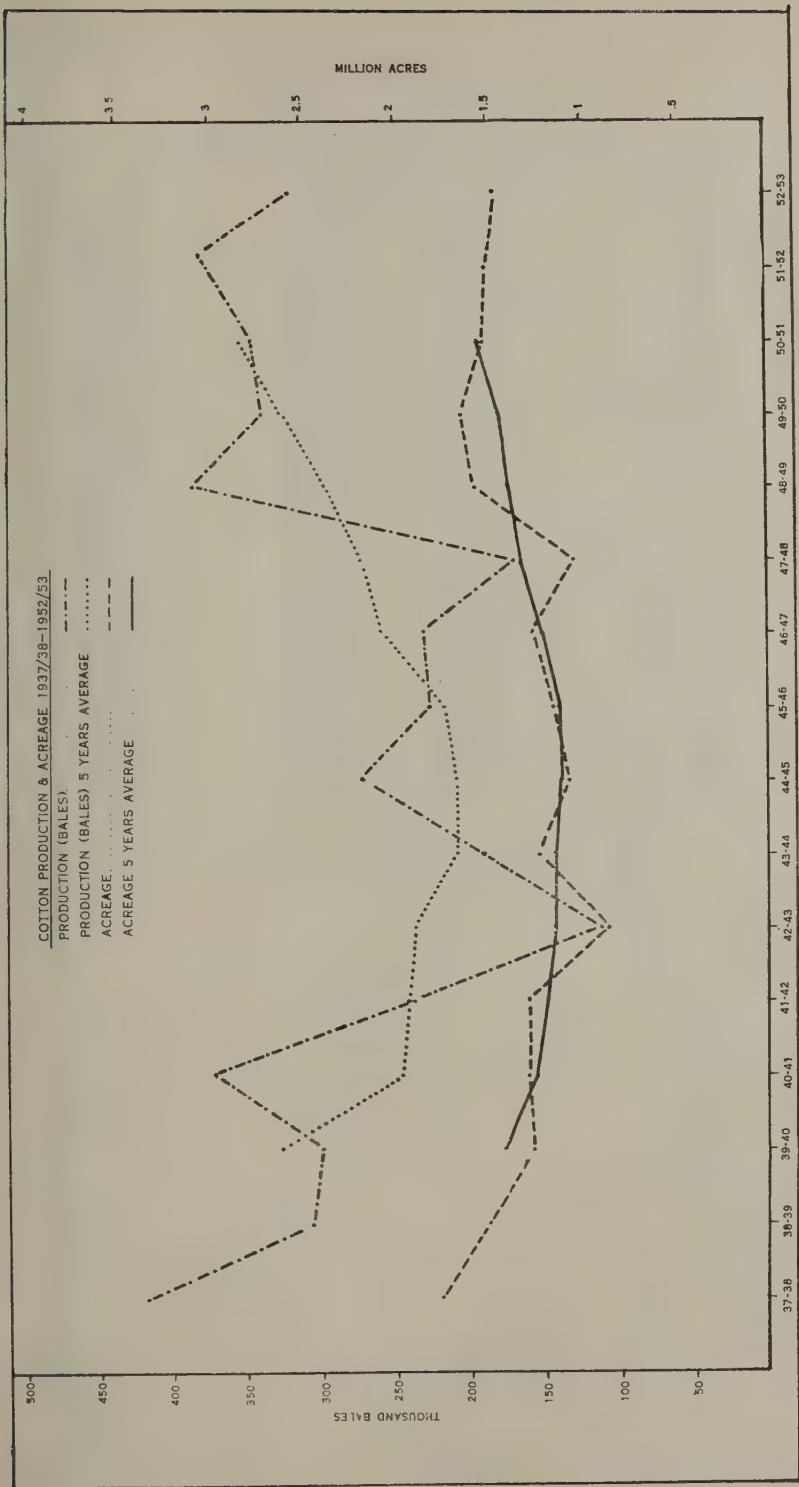
†Similarly these figures do not agree with those in Table IV, the Protectorate totals, however, agree.

COTTON PRODUCTION—1953-1954 SEASON

MONTHLY PLANTINGS—ACRES

Province and Zone	April	May	June	July	August	September	TOTAL
<i>Buganda—</i>							
Mengo ..	—	3,570	98,589	113,858	90,582	2,726	309,325
Masaka ..	—	5,196	6,056	8,076	3,920	5,426	28,674
Mubende ..	—	3,328	21,320	17,857	17,570	—	60,075
TOTAL ..	—	12,094	125,965	139,791	112,072	8,152	398,074
<i>Eastern—</i>							
Busoga ..	—	15,428	125,476	121,670	80,511	—	343,085
North Mbale ..	25	7,015	56,527	61,446	46,188	—	171,201
South Mbale ..	—	5,050	40,961	78,903	37,575	—	162,489
South Teso ..	107	3,614	23,629	26,345	12,060	—	65,755
South Teso Segregated ..	56	2,203	14,060	12,168	8,591	—	37,078
North Teso ..	61	1,953	20,157	18,105	7,698	—	47,974
Usuku ..	911	4,504	7,679	3,314	87	—	16,495
TOTAL ..	1,160	39,767	288,489	321,951	192,710	—	844,077*
<i>Northern—</i>							
Lango ..	1,939	2,401	45,270	91,033	38,039	—	178,682
West Acholi ..	—	148	7,064	15,830	10,453	—	33,495
East Acholi and Karamoja ..	—	302	6,447	20,663	8,543	—	35,955
West Nile ..	—	197	15,955	36,164	20,148	—	72,464
TOTAL ..	1,939	3,048	74,736	163,690	77,183	—	320,596*
<i>Western—</i>							
Toro ..	—	—	—	323	17,121	5,755	23,199
Bunyoro ..	—	1,666	5,171	12,822	5,550	68	25,277
TOTAL ..	—	1,666	5,171	13,145	22,671	5,823	48,476
PROTECTORATE TOTALS ..	3,099	56,575	494,371	638,578	404,637	13,975	1,611,223

*These figures do not agree with those in Table III (a), III (c), and III (e) due to the fact that the boundaries of the zones listed under Eastern and Northern Provinces do not co-incide with the Provincial Boundaries. The differences are compensating and the Protectorate totals agree.



COTTON PRODUCTION

NO. OF BALES OF 400 LBS.—1907–1953

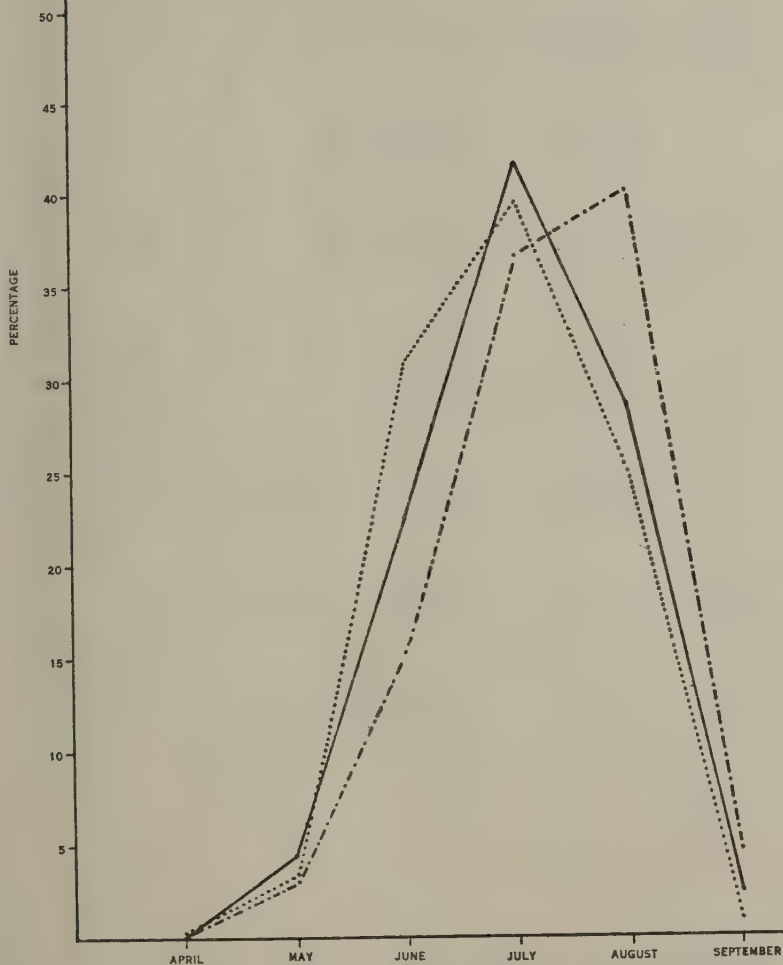
<i>Season</i>	<i>Bales</i>	<i>Season</i>	<i>Bales</i>
1907	2,000	1930–31	189,000
1908	4,000	1931–32	207,000
1909	5,000	1932–33	295,000
1910	12,000	1933–34	286,000
1911	20,000	1934–35	253,000
1912–13	26,000	1935–36	316,000
1913–14	40,000	1936–37	332,000
1914–15	26,000	1937–38	418,000
1915–16	22,000	1938–39	307,000
1916–17	28,000	1939–40	300,000
1917–18	27,000	1940–41	365,000
1918–19	36,000	1941–42	238,000
1919–20	47,000	1942–43	112,000
1920–21	81,000	1943–44	191,000
1921–22	48,000	1944–45	272,000
1922–23	88,000	1945–46	227,000
1923–24	128,000	1946–47	231,000
1924–25	196,000	1947–48	170,000
1925–26	180,000	1948–49	391,000
1926–27	131,000	1949–50	339,000
1927–28	138,000	1950–51	346,000
1928–29	204,000	1951–52	380,000
1929–30	125,000	1952–53	320,000

NOTE.—All figures corrected to 1,000 bales.

COTTON

MONTHLY PLANTINGS
AS PERCENTAGES OF TOTAL

MEAN 1948/49-1952/53.....
1953/1954.....
1952/1953.....



COTTON
MONTHLY PLANTINGS AS PERCENTAGES OF TOTAL

Province and Zone	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
	1953-4	Mean 1948-9 1952-3	1953-4	Mean 1948-9 1952-3	1953-4	Mean 1948-9 1952-3	1953-4	Mean 1948-9 1952-3	1953-4	Mean 1948-9 1952-3	1953-4	Mean 1948-9 1952-3
<i>Buganda Province—</i>												
Mengo ..	—	—	1.2	0.7	31.9	17.3	36.8	40.7	29.2	37.2	0.9	4.1
Masaka ..	—	—	18.1	2.9	21.1	25.0	28.2	27.9	13.7	27.9	18.9	16.3
Mubende ..	—	—	5.5	2.5	35.5	16.3	29.8	39.0	29.2	37.3	—	4.9
TOTAL ..	—	—	3.0	1.2	31.6	18.0	35.2	39.3	28.2	36.2	2.0	5.3
<i>Eastern Province—</i>												
Busoga ..	—	—	4.5	7.1	36.6	24.7	35.5	41.0	23.4	26.6	—	0.6
North Mbale ..	—	0.1	4.1	4.8	33.0	22.3	35.9	43.5	27.0	29.2	—	0.1
South Mbale ..	—	—	3.1	3.4	25.2	24.4	48.6	46.8	23.1	25.0	—	0.4
South Teso ..	0.2	0.7	5.5	14.5	35.9	34.2	40.1	31.4	18.3	19.2	—	—
South Teso Segregated ..	0.2	0.6	5.9	37.9	30.8	32.8	29.9	23.2	23.2	24.7	—	—
North Teso ..	0.1	0.2	4.1	10.7	42.0	37.6	37.7	34.7	16.0	16.8	—	—
Usuku ..	5.5	8.1	27.3	49.5	46.5	32.3	20.2	9.3	0.5	0.8	—	—
TOTAL ..	0.1	0.3	4.7	7.8	34.2	26.1	38.1	40.4	22.8	25.0	—	0.4
<i>Western Province—</i>												
Toro ..	—	—	—	—	—	1.0	1.4	18.3	73.8	51.5	24.8	29.2
Bunyoro ..	—	—	6.6	1.5	20.4	22.9	50.7	48.0	22.0	24.9	0.3	2.7
TOTAL ..	—	—	3.4	0.8	10.7	12.7	27.1	34.2	46.8	37.2	12.0	15.1
<i>Northern Province—</i>												
Lango ..	1.1	0.1	1.4	2.5	25.3	24.6	50.9	47.8	21.3	24.5	—	0.5
West Acholi ..	—	—	0.4	0.9	21.2	20.1	47.2	55.9	31.2	22.6	—	0.5
East Acholi and Karamoja ..	—	—	0.8	2.3	17.9	22.1	57.5	49.4	23.8	24.7	—	1.5
West Nile ..	—	—	0.3	0.5	22.0	17.4	49.9	52.4	27.8	26.2	—	3.5
TOTAL ..	0.6	—	1.0	2.0	23.3	22.6	51.0	49.7	24.1	24.6	—	1.1
PROTECTORATE TOTALS ..	0.2	0.1	3.4	4.5	30.7	22.6	39.7	41.7	25.1	28.7	0.9	2.4

CROP PRODUCTION
ESTIMATED ACRES UNDER CROPS—1952 AND 1953
AFRICAN CULTIVATION

Crops	BUGANDA		EASTERN		NORTHERN		WESTERN		TOTALS	
	1952	1953	1952	1953	1952	1953	1952	1953	1952	1953
Beans, Mixed	127,617	230,040	156,684	160,841	113,842	138,668	100,208	109,631	498,351	639,180
Beans, Soya	4,924	1,246	—	—	545	—	2,973	2,201	8,442	3,447
Cassava	79,162	63,506	253,194	341,604	184,195	235,766	104,357	118,589	620,908	759,465
Chillies	1,829	154	—	—	—	—	29	17	1,858	171
Coffee, Arabica	1,300	1,400	13,000	14,000	30	21	4,620	5,115	18,950	20,536
Coffee, Robusta	203,353	203,971	600	620	—	—	5,953	7,126	209,906	211,717
Cotton	341,657	398,074	805,146	867,288	272,666	297,385	53,084	48,476	1,472,553	1,611,223
Flax	—	—	—	—	—	—	358	506	358	506
Gram	19,489	26,258	—	—	515	81	4	—	20,008	26,339
Groundnuts	56,918	76,714	211,191	235,769	64,235	70,842	19,068	23,700	351,412	407,025
Maize	120,473	346,609	87,072	209,549	43,968	42,967	49,731	62,777	301,244	661,902
Millet, Sorghum	45,733	63,739	164,800	172,650	158,515	241,991	185,115	177,639	554,163	656,019
Millet, Finger	21,271	32,564	572,251	721,973	271,207	333,573	139,667	134,017	1,004,396	1,222,127
Millet, Bullrush	—	—	—	—	2,375	2,411	—	—	2,375	2,411
Onions	—	—	—	—	—	—	1,398	1,847	1,398	1,847
Peas—Pigeon	—	—	—	—	173,322	210,145	766	243	174,088	210,388
Peas, Field	—	—	—	—	—	—	33,737	27,778	33,737	27,778
Plantains	507,565	500,522	281,800	283,800	2,004	750	121,965	358,764	913,334	1,143,836
Potatoes—Sweet	102,140	159,852	179,911	198,684	131,008	142,672	131,957	142,515	545,016	643,723
Potatoes, English	847	—	2,473	2,629	—	—	8,941	9,024	12,261	11,653
Rice	—	—	1,595	2,388	1,608	2,659	6,772	7,065	9,975	12,112
Simsim	3,662	6,186	22,204	20,559	178,617	178,470	6,024	6,851	210,507	212,066
Sunflower	—	—	—	—	1,016	980	408	87	1,424	1,067
Tobacco, Flue cured	—	—	—	—	1,669	1,778	—	—	1,669	1,778
Tobacco, Fire cured	969	640	—	—	—	—	3,505	3,913	4,474	4,553
Tobacco, Air cured	353	183	—	—	1,036	1,262	235	133	1,624	1,578
Tobacco, Nicotine	—	—	—	—	—	—	1,863	588	1,863	588
Wheat	—	—	702	522	—	—	261	515	963	1,037
TOTALS	1,639,262	2,111,658	2,752,623	2,232,876	1,602,373	1,902,421	982,999	1,249,117	6,977,257	8,496,072

CROP PRODUCTION

APPENDIX III (b)

ESTIMATED ACREAGES UNDER CROPS—1952 AND 1953

AFRICAN CULTIVATION
BUGANDA PROVINCE

Crops	Mengo		Masaka		Mubende		PROVINCIAL TOTALS	
	1952	1953	1952	1953	1952	1953	1952	1953
Beans, Mixed ..	102,671	181,806	20,210	33,989	4,736	14,245	127,617	230,040
Beans, Soya ..	2,392	1,246	2,532	—	—	—	4,924	1,246
Cassava ..	59,062	47,222	9,374	7,851	10,726	8,433	79,162	63,506
Chillies ..	366	—	1,434	139	29	15	1,829	154
Coffee, Arabica ..	1,200	1,200	100	100	3,679	100	1,300	1,400
Coffee, Robusta ..	141,414	135,111	58,260	62,881	5,979	5,979	203,353	203,971
Cotton ..	299,453	348,577	27,880	28,674	14,324	20,823	341,657	398,074
Gram ..	15,972	23,827	3,517	2,431	—	—	19,489	26,258
Groundnuts ..	44,722	55,291	7,678	15,113	4,518	6,310	56,918	76,714
Maize ..	112,039	289,344	6,133	52,362	2,301	4,903	120,473	346,609
Millet, Sorghum ..	41,399	37,863	3,223	22,177	1,111	3,699	45,733	63,739
Millet, Finger ..	14,936	23,105	936	3,072	5,399	6,387	21,271	32,564
Plantains ..	322,319	290,959	146,628	161,290	38,618	48,273	507,565	500,522
Potatoes, Sweet ..	79,655	120,437	10,490	24,224	11,995	15,191	102,140	159,852
Potatoes, English ..	3,177	5,630	847	—	—	—	847	—
Simsim ..	—	—	—	—	485	556	3,662	6,186
Tobacco, Fire cured ..	—	—	—	—	969	640	969	640
Tobacco, Air cured..	—	—	—	—	353	183	353	183
TOTALS ..	1,240,777	1,561,618	299,242	414,303	99,243	135,737	1,639,262	2,111,658

COTTON PRODUCTION
ESTIMATED ACREAGES UNDER CROPS—1952 AND 1953
AFRICAN CULTIVATION
EASTERN PROVINCE

APPENDIX III (c)

Crops	Busoga		Mbale		Teso		PROVINCIAL TOTALS	
	1952	1953	1952	1953	1952	1953	1952	1953
Beans, Mixed	13,879	7,455	55,096	84,572	87,709	68,814	156,684	160,841
Cassava ..	35,565	74,857	61,473	112,310	156,156	154,437	253,194	341,604
Coffee, Arabica	—	—	13,000	14,000	—	—	13,000	14,000
Coffee, Robusta	—	620	—	—	—	—	600	620
Cotton ..	288,350	343,085	269,317	285,905	247,479	238,298	805,146	867,288
Groundnuts	66,680	64,881	46,765	52,297	97,746	118,591	211,191	235,769
Maize ..	42,147	143,501	43,066	64,618	1,859	1,430	87,072	209,549
Millet—Sorghum	1,446	1,267	19,822	25,320	143,532	146,063	164,800	172,650
Millet, Finger	131,246	208,193	247,833	262,140	193,172	251,640	572,251	721,973
Plantains ..	180,000	182,000	100,000	100,000	1,800	1,800	281,800	283,800
Potatoes, Sweet	71,756	85,011	40,468	33,671	67,687	80,002	179,911	198,684
Potatoes, English	—	—	2,473	2,629	—	—	2,473	2,629
Rice ..	57	46	84	315	1,454	2,027	1,595	2,388
Simsim ..	1,527	1,447	993	963	19,684	18,149	22,204	20,559
Wheat ..	—	—	702	522	—	—	702	522
TOTALS ..	833,253	1,112,363	901,092	1,039,262	1,018,278	1,081,251	2,752,623	3,232,876

CROP PRODUCTION
ESTIMATED ACREAGES UNDER CROPS—1952 AND 1953
AFRICAN CULTIVATION
WESTERN PROVINCE

Crops	Ankole		Bunyoro		Kigezi		Toro		PROVINCIAL TOTALS	
	1952	1953	1952	1953	1952	1953	1952	1953	1952	1953
Beans, Mixed	21,007	17,512	10,099	11,230	42,057	49,896	27,045	30,993	100,208	109,631
Beans, Soya	2,928	2,123	—	—	8	—	37	78	2,973	2,201
Cassava	4,732	8,090	20,559	22,732	2,737	2,319	76,329	85,448	104,357	118,589
Chillies	—	—	—	—	—	—	29	17	29	17
Coffee, Arabica	2,282	2,673	—	—	520	520	1,818	1,922	4,620	5,115
Coffee, Robusta	3,260	3,606	—	750	420	429	2,273	2,341	5,953	7,126
Cotton	—	—	24,972	25,277	—	—	28,112	23,199	53,084	48,476
Flax	76	116	—	—	282	390	—	—	358	506
Gram	—	—	—	—	—	—	4	—	4	—
Groundnuts	11,094	12,545	719	3,927	3,185	2,967	4,070	4,261	19,068	23,700
Maize	7,311	6,627	7,568	6,787	21,205	27,705	13,647	21,658	49,731	62,777
Millet, Sorghum	10,327	15,824	1,527	1,191	168,338	155,303	4,923	5,321	185,115	177,639
Millet, Finger	31,333	34,691	27,018	19,187	53,450	52,138	27,866	28,001	139,667	134,017
Onions	781	1,050	—	94	168	314	449	389	1,398	1,847
Peas, Field	9,181	6,998	—	—	24,401	20,579	155	201	33,737	27,778
Peas, Pigeon	—	—	498	—	—	—	268	243	766	243
Plantains	35,659	262,828	18,294	18,927	47,585	56,548	20,427	20,461	121,965	358,764
Potatoes, English	945	—	17	28	7,521	8,599	458	397	8,941	9,024
Potatoes, Sweet	15,693	27,867	12,830	14,251	87,953	84,608	15,481	15,789	131,957	142,515
Rice	—	—	—	6	—	—	6,772	7,059	6,772	7,065
Simsim	—	—	5,727	6,682	17	—	280	169	6,024	6,851
Sunflower	—	—	—	—	408	87	—	—	408	87
Tobacco, Air cured	—	—	—	10	235	123	—	—	235	133
Tobacco, Fire cured	—	—	3,505	3,913	—	—	—	—	3,505	3,913
Tobacco, Nicotine	391	—	—	—	1,472	588	—	—	1,863	588
Wheat	—	—	—	—	139	426	122	89	261	515
TOTALS	157,000	402,550	133,333	134,992	462,101	463,539	230,565	248,036	982,999	1,249,117

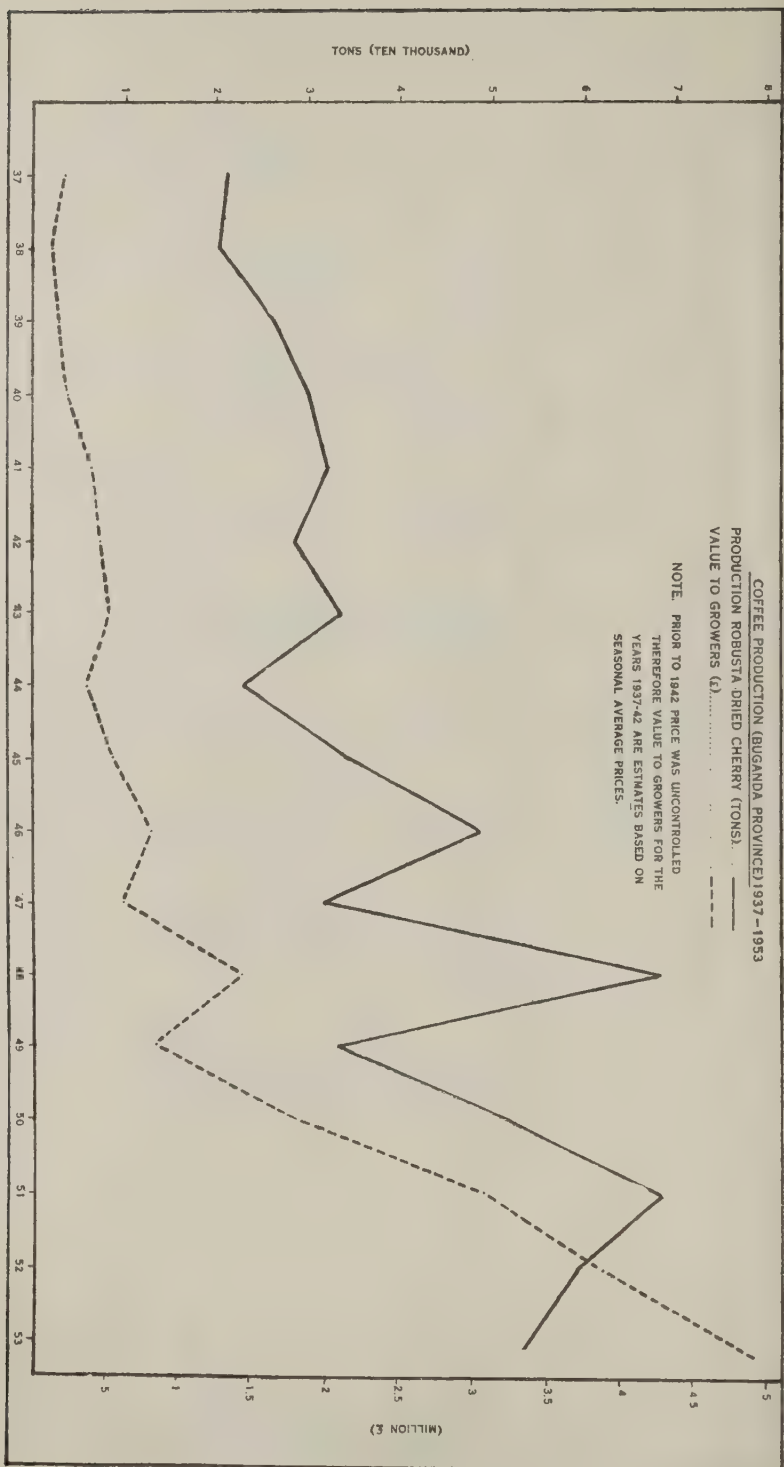
CROP PRODUCTION

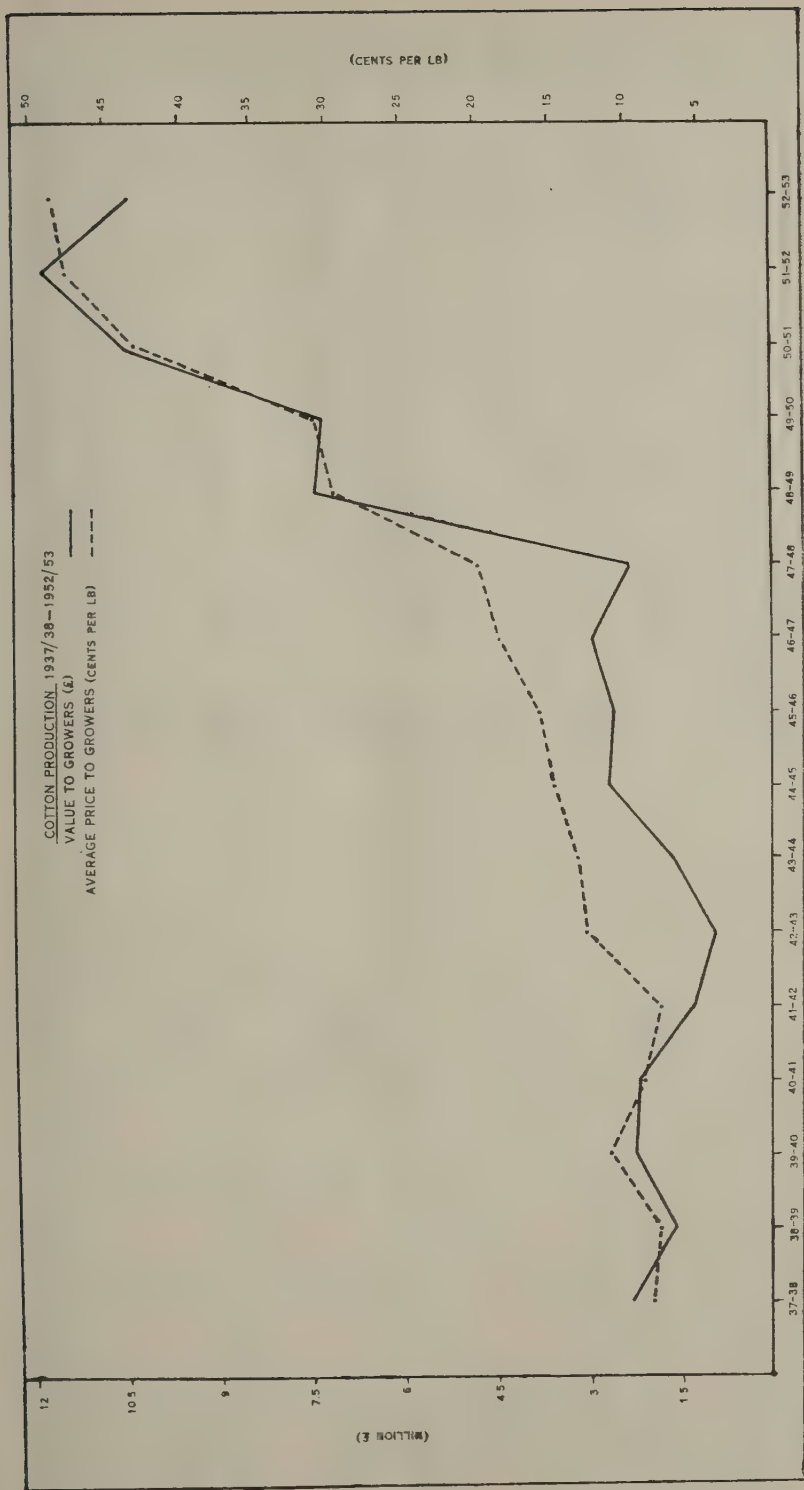
ESTIMATED ACREAGES UNDER CROPS—1952 AND 1953

AFRICAN CULTIVATION
NORTHERN PROVINCE

Crops	Lango		Achoi		West Nile/Madi		Karamoja		PROVINCIAL TOTALS	
	1952	1953	1952	1953	1952	1953	1952	1953	1952	1953
Beans, Mixed	48,846	48,532	15,354	23,998	49,642	66,138	—	—	113,842	138,668
Beans, Soya	545	—	—	—	—	—	—	—	545	—
Cassava	49,581	69,376	20,094	36,426	114,420	129,864	100	100	184,195	235,766
Coffee, Arabica	—	—	—	—	30	21	—	—	30	21
Cotton	150,100	158,938	66,656	65,743	55,610	72,464	300	240	272,666	297,385
Gram	515	81	—	—	—	—	—	—	515	81
Groundnuts	17,928	29,596	22,930	24,475	22,877	16,171	500	600	64,235	70,842
Maize	3,927	6,762	2,953	2,213	36,588	31,992	500	2,000	43,968	42,967
Millet, Sorghum	91,944	152,953	12,451	28,863	24,120	30,175	30,000	30,000	158,515	241,991
Millet, Finger	*119,163	*167,399	75,058	80,929	74,986	83,245	2,000	2,000	271,207	333,573
Millet, Bullrush	—	—	875	911	—	—	1,500	1,500	2,375	2,411
Peas, Pigeon	*119,163	*167,399	45,000	36,000	9,159	6,746	—	—	173,322	210,145
Plantains	2,004	750	—	—	—	—	—	—	2,004	750
Potatoes, Sweet	25,991	47,765	40,199	44,039	64,018	49,868	800	1,000	131,008	142,672
Rice	1,296	2,117	312	176	—	366	—	—	1,608	2,659
Simsim	82,350	90,727	58,821	51,101	37,346	36,442	100	200	178,617	178,470
Sunflower	—	—	—	—	1,016	980	—	—	1,016	980
Tobacco, Air cured	—	—	20	6	1,016	1,256	—	—	1,036	1,262
Tobacco, Flue cured	17	51	615	625	1,037	1,102	—	—	1,669	1,778
TOTALS	713,370	942,446	361,338	395,505	491,865	526,830	35,800	37,640	1,602,373	1,902,421

*Interplanted





CROP PRODUCTION

APPENDIX IV

QUANTITIES MARKETED AND ESTIMATED VALUES (AFRICAN PRODUCTION)

Cotton		Flax Seed		Flax Straw		Tobacco Flue Cured		Tobacco Air Cured		Tobacco Fire Cured		Total Value	Total Value
Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	1953	1952
Tons	£	Tons	£	Tons	£	Tons	£	Tons	£	Tons	£	£	£
48,801	2,651,369	—	—	—	—	—	—	—	—	—	—	2,654,577	2,443,879
25,616	1,388,262	—	—	—	—	—	—	—	—	—	—	2,021,302	2,095,883
25,277	1,344,085	—	—	—	—	—	—	—	—	—	—	1,344,085	1,245,694
99,694	5,383,716	—	—	—	—	—	—	—	—	—	—	6,019,964	5,785,456
12,797	680,025	—	—	—	—	73	500	—	—	—	—	680,585	1,012,061
7,158	377,558	—	—	—	—	611	4,447	1	32	—	—	382,037	655,398
40	2,150	—	—	—	—	—	—	—	—	—	—	2,150	—
4,484	239,396	—	—	—	—	1,236	8,036	128	9,549	—	—	256,981	368,922
24,479	1,299,189	—	—	—	—	1,920	12,983	129	9,581	—	—	1,321,753	2,036,381
4,140	228,933	—	—	—	—	7	49	—	—	950	71,402	303,298	275,016
2,359	127,433	—	—	—	—	—	—	—	—	—	—	176,674	182,084
—	—	30	188	8	126	—	—	—	—	—	—	16,413	19,521
—	—	101	494	22	337	—	—	—	—	—	—	1,002	1,749
6,499	356,366	141	682	30	463	7	49	—	—	950	71,402	497,387	478,370
52,759	2,937,984	—	—	—	—	—	—	—	—	—	—	6,253,035	6,160,822
4,438	243,858	—	—	—	—	—	—	—	—	—	—	1,934,679	1,659,524
2,826	152,786	—	—	—	—	—	—	22	1,721	132	10,283	185,450	225,953
60,023	3,334,628	—	—	—	—	—	—	22	1,721	132	10,283	8,373,164	8,046,299
90,695	10,373,899	141	682	30	463	†1,927	13,032	151	11,302	1,082	81,685	16,212,268	16,346,506

‡Dried Cherry.

*Parchment.

†Green Leaf.

on prices to producers.

	Coffee Arabica		Coffee Robusta	
	Quantity	Value	Quantity	Value
<i>Eastern Province—</i>				
Busoga ..	—	—	—	—
Mbale ..	*2,307	633,040	—	—
Teso ..	—	—	—	—
<i>TOTAL</i> ..	2,307	633,040	30	3,200
<i>Northern Province—</i>				
Lango ..	—	—	—	—
Acholi ..	—	—	—	—
Karamoja ..	—	—	—	—
West Nile/Madi ..	—	—	—	—
<i>TOTAL</i> ..	—	—	—	—
<i>Western Province—</i>				
Bunyoro ..	—	—	—	—
Toro ..	+19	5,180	+39	2,900
Ankole ..	+23	6,424	+197	44,000
Kigezi ..	+1	171	+44	9,600
<i>TOTAL</i> ..	43	11,775	280	56,600
<i>Buganda Province—</i>				
Mengo ..	\$113	11,931	\$36,068	3,303,100
Masaka ..	\$170	17,607	\$17,490	1,673,200
Mubende ..	\$18	2,081	\$238	18,500
<i>TOTAL</i> ..	301	31,619	53,796	4,994,900
<i>PROTECTORATE TOTALS</i>	2,651	676,434	54,106	5,054,700

†Hulled

NOTE.—All values are ba

	QUANTITIES		VALUE IN £s			
	1952	1953	1951	1952	1953	
1						
578	28,151	32,144	658,048	634,312	639,510	
484	11,575	14,990	421,200	816,558	850,002	
	1,834	1,013	—	109,603	63,874	
44	—	25	2,230	—	1,219	
778	25,736	33,410	319,761	562,719	796,928	
	341	452	—	7,822	14,773	
384	—	—	—	—	—	
	1,647	3,093	152,910	200,384	351,126	
365	5,388	858	94,878	114,067	21,246	
08	67,954	59,222	28,741,604	29,953,559	16,802,041	
90	736	972	194,174	117,965	83,037	
40	7	21	5,746	1,800	3,656	
28	39,425	35,679	13,654,093	12,345,092	11,543,404	
54	949	1,250	265,243	281,476	355,656	
28	491,026	117,097	55,095	55,346	11,147	
47	64	56	9,052	12,401	12,557	
47	549	538	135,524	74,711	81,581	
11	8	15	1,860	1,011	2,274	
10	12	22	33,051	43,944	73,392	
75	—	7	12,230	—	372	
20	10	5	5,145	455	187	
	64	203	—	23	70	
17	2,283	1,041	77,586	86,915	37,435	
12	4,455	1,897	146,636	179,574	81,509	
14	3	6	1,525	365	450	
17	212	673	35,409	9,268	32,941	
3	11	—	12,783	6,128	—	
3	154	29	34,746	4,252	905	
4	146	45	90,302	43,456	11,450	
3	1,098	523	92,026	31,668	12,151	
		</				

APPENDIX IV

No.	Tobacco Air Cured		Tobacco Fire Cured		Total Value	Total Value
	Quantity	Value	Quantity	Value	1953	1952
	<i>Tons</i>	£	<i>Tons</i>	£	£	£
	—	—	—	—	2,654,577	2,443,879
	—	—	—	—	2,021,302	2,095,883
	—	—	—	—	1,344,085	1,245,694
	—	—	—	—	6,019,964	5,785,456
	—	—	—	—	—	—
0	—	—	—	—	680,585	1,012,061
7	1	32	—	—	382,037	655,398
6	128	9,549	—	—	2,150	—
3	129	9,581	—	—	256,981	368,922
	—	—	—	—	1,321,753	2,036,381
9	—	—	950	71,402	303,298	275,016
	—	—	—	—	176,674	182,084
	—	—	—	—	16,413	19,521
	—	—	—	—	1,002	1,749
9	—	—	950	71,402	497,387	478,370
	—	—	—	—	—	—
	—	—	—	—	6,253,035	6,160,822
	—	—	—	—	1,934,679	1,659,524
	22	1,721	132	10,283	185,450	225,953
	22	1,721	132	10,283	8,373,164	8,046,299
2	151	11,302	1,082	81,685	16,212,268	16,346,506

†Green Leaf.

ARTICLE	UNIT	QUANTITIES			VALUE IN £s		
		1951	1952	1953	1951	1952	1953
<i>Oilseeds and Products :</i>							
Cotton Seed ..	Tons	30,578	28,151	32,144	658,048	634,312	639,510
Castor Seed ..	Tons	4,484	11,575	14,990	421,200	816,558	850,002
Groundnuts ..	Tons	—	1,834	1,013	—	109,603	63,874
Linseed ..	Tons	44	—	25	2,230	—	1,219
Cotton Seed Cake ..	Tons	17,078	25,736	33,410	319,761	562,719	796,928
Groundnuts and Sesame Cake ..	Tons	—	341	452	—	7,822	14,773
Castor Seed Oil ..	Tons	—	—	—	—	—	—
Edible Oils and Fats ..	Tons	884	1,647	3,093	152,910	200,384	351,126
Other Oil Seed Cakes ..	Tons	4,865	5,388	858	94,878	114,067	21,246
Meals and Vegetable Oil Residues ..	Tons	—	—	—	—	—	—
<i>Fibres :</i>							
Cotton ..	Tons	61,808	67,954	59,222	28,741,604	29,953,559	16,802,041
Sisal ..	Tons	1,190	736	972	194,174	117,965	83,037
Flax ..	Tons	40	7	21	5,746	1,800	3,656
<i>Beverage Crops and Tobacco :</i>							
Coffee, raw, hulled ..	Tons	43,628	39,425	35,679	13,654,093	12,345,092	11,543,404
Tea ..	Tons	854	949	1,250	265,243	281,476	355,656
Cigarettes ..	Lbs.	490,712	491,026	117,097	55,095	55,346	11,147
Tobacco, unmanufactured ..	Tons	47	64	56	9,052	12,401	12,557
<i>Spices and Drugs :</i>							
Chillies ..	Tons	847	549	538	135,524	74,711	81,581
Cinchona Bark ..	Tons	11	8	15	1,860	1,011	2,274
Papaia ..	Tons	10	12	22	33,051	43,944	73,392
<i>Sugar and Products :</i>							
Sugar ..	Tons	375	—	7	12,230	—	372
Jaggery ..	Tons	120	10	5	5,145	455	187
Ethyl Alcohol ..	Proof Gals.	—	64	203	—	23	70
<i>Beans and Pulses :</i>							
Beans and Peas ..	Tons	2,157	2,283	1,041	77,586	86,915	37,435
Pulses ..	Tons	3,692	4,455	1,897	146,636	179,574	81,509
Dhal ..	Tons	24	3	6	1,525	365	450
Soya Beans ..	Tons	757	212	673	35,409	9,268	32,941
<i>Miscellaneous :</i>							
Insecticides ..	Tons	23	11	—	12,783	6,128	—
Millet ..	Tons	1,103	154	29	34,746	4,252	905
Rubber ..	Tons	234	146	45	90,302	43,456	11,450
Wattle Bark ..	Tons	2,773	1,098	523	92,026	31,668	12,151
Total		£			45,252,857	45,694,877	31,884,893

CROP PRODUCTION

UGANDA

NON-AFRICAN PRODUCTION, 1953

Crop	ESTIMATED ACREAGE		ESTIMATED PRODUCTION			
	1952	1953	Quantity		Value	
			1952	1953	1952	1953
			tons	tons	£	£
Coffee (Robusta)	20,350	19,714	4,851	5,921	1,425,170	1,846,697
Coffee (Arabica)	3,003	3,111	376	419	140,278	162,397
Rubber ..	7,000	7,000	146	45	41,098	11,450
Sugar ..	27,803	26,547	55,180	47,973	2,311,756	2,146,484
Sisal ..	9,000	9,000	1,000	900	100,000	60,000
Tea ..	7,798	8,397	1,712	2,140	431,024	599,241
Pyrethrum ..	—	—	8	—	1,100	—
TOTAL ..	74,954	73,769	—	—	4,450,426	4,826,269

POPULATION AND AVAILABILITY OF LAND

Province/District	Total Area <i>Sq. miles</i>	Areas of land excluding open water and reserved forest <i>Sq. miles</i>	Cultivated Area <i>Acres</i>	Population*	Population Density <i>Per sq. mile</i>	Cultivated land per head of the Population <i>Acres</i>	Estimated available land per head of the Population <i>Acres</i>	Ratio of available land to land used
<i>Buganda—</i>								
Mengo ..	14,589	10,059	1,074,093	899,596	89	1.2	7.2	6.0
Masaka ..	8,122	3,973	332,709	317,688	80	1.0	8.0	7.6
Mubende ..	2,679	2,607	113,423	84,878	33	1.3	19.7	14.7
TOTAL ..	25,390	16,639	1,520,225	1,302,162	78	1.2	8.2	7.0
<i>Eastern—</i>								
Busoga ..	6,876	3,416	802,450	505,998	148	1.6	4.3	2.7
Mbale ..	3,367	2,869	774,174	599,950	209	1.2	3.1	2.5
Teso ..	4,990	4,527	723,771	402,564	89	1.8	7.2	4.0
TOTAL ..	15,233	10,812	2,270,395	1,508,512	140	1.5	4.6	3.0
<i>Northern—</i>								
Acholi ..	11,176	10,634	330,900	215,655	20	1.5	31.6	20.6
Lango ..	4,898	4,519	587,476	265,890	59	2.2	10.9	4.9
Karamoja ..	11,472	10,336	37,802	125,567	12	0.3	52.8	175.5
West Nile and Madi	6,061	5,289	592,866	336,063	64	1.8	10.1	5.7
TOTAL ..	33,607	30,778	1,549,044	943,175	31	1.6	20.9	12.7
<i>Western—</i>								
Bunyoro ..	6,011	4,198	123,249	108,380	26	1.1	24.8	21.8
Toro ..	5,380	4,319	182,375	258,873	60	0.7	10.7	15.2
Ankole ..	6,320	5,621	350,245	400,924	71	0.9	9.0	10.3
Kigezi ..	2,040	1,757	261,872	395,529	225	0.7	2.8	4.3
TOTAL ..	19,751	15,895	917,741	1,163,706	73	0.8	8.7	11.1
PROTECTORATE TOTAL ..	93,981	74,124	6,257,405	4,917,555	66	1.3	9.6	7.6

*1948 Census Figures

DEPARTMENT OF AGRICULTURE

STAFF POSTINGS AS AT 31ST DECEMBER, 1953

A.—ADMINISTRATIVE

Title	Name	Station	Remarks
<i>Director of Agriculture</i>	T. Y. WATSON, M.B.E.	Entebbe	Proceeded on leave 20-8-53.
<i>Deputy Director of Agriculture</i>	W. J. MILL IRVING, O.B.E.	Entebbe	Acting Director of Agriculture from 20-8-53 to 24-10-53. Proceeded on leave 15-11-53.
<i>Assistant Director of Agriculture</i>	J. T. MOON..	Entebbe	Acting Deputy Director of Agriculture from 20-8-53 to 24-10-53 and 16-11-53 to 31-12-53. Proceeded on leave 17-4-53.
<i>Administrative Assistant</i>	E. B. BUCKINGHAM	Entebbe	Proceeded on leave 21-7-53.
<i>Office Superintendent</i>	LT.-COL. D. MACDONALD	Kawanda	
<i>Stenographic Secretaries</i>	Miss V. M. FITZ-HUGH	Entebbe	
	Miss B. E. WRAY	Entebbe.	
	Miss J. M. SMEDLEY	Kampala.	

B.—GENERAL DIVISION

<i>Assistant Director of Agriculture (Special Development)</i>	R. K. KERKHAM	Kawanda.	Provincial Agricultural Officer, Eastern Province.
<i>Assistant Director of Agriculture (Field)</i>	D. F. STEWART	Jinja	Proceeded on leave 30-8-53. Provincial Agricultural Officer, Buganda.
	D. R. N. BROWN	Kampala	
<i>Senior Agricultural Officers and Agricultural Officers</i>	R. P. DAVIDSON	Fort Portal	Proceeded on leave 15-5-53. Provincial Agricultural Officer, Western Province.
	J. W. PURSEGLOVE	—	Seconded to Cambridge University.
	G. D. BADGER	Gulu	Proceeded on leave 21-6-53. Provincial Agricultural Officer, Northern Province.
	G. W. ANDERSON	Kampala	On transfer from Zanzibar, 22-11-53.
	A. E. B. WILLIAMS	Jinja	Proceeded on leave 5-1-53.
	D. D. CAMPBELL, M.C.	Mbale	Proceeded on leave 30-6-53.
	D. J. PARSONS, M.C.	Serere	Proceeded on leave 8-3-53.
	E. S. T. MARSHALL	Soroti.	
	W. GALLEY	Bukalasa.	
	G. WRIGLEY	Jinja.	

Title	Name	Station	Remarks
<i>Principal Field Officers (Agriculture) .. Senior Field Officers and Field Officers (Agriculture) ..</i>	D. C. TODD ..	Kabale ..	Proceeded on leave 21-4-53.
	MAJOR W. H. EDWARDS, M.C. ..	Kampala. ..	
	R. G. HAMPSON, D. F. C. ..	Masaka ..	
	J. R. LOW ..	Lira ..	Proceeded on leave 20-7-53.
	E. W. KING ..	Kabale ..	Proceeded on leave 24-11-53.
	D. INNES ..	Gulu ..	
	R. B. JOHNSTON ..	Mbarara ..	
	R. J. HARVE ..	Fort Portal ..	
	E. H. JONES ..	Entebbe ..	New appointment.
	A. OUSELEY-SMITH ..	Mbale ..	New appointment.
	A. R. DUNBAR ..	Hoima ..	New appointment.
	C. R. HORRELL ..	Serere ..	New appointment.
	W. HADLOW ..	Arua ..	New appointment.
	J. F. LOW ..	Serere ..	Proceeded on leave 29-8-53.
	T. BOOTHROYD ..	Kampala. ..	
	L. B. ELLIS ..	Kawanda. ..	
<i>Mechanic</i>	CAPT. T. G. DUNCAN, M.C. ..	Masaka. ..	
	G. OLIVER ..	Lira ..	
	G. A. FENNEL ..	Kabale ..	
	A. G. K. WILL ..	Mbale. ..	
	L. GREEN ..	Kawanda ..	Proceeded on leave 2-10-53.
	J. G. WILSON ..	Moroto. ..	
	J. P. M. BATTEN ..	Kampala. ..	
	J. L. MCCUMISKEY ..	Masindi. ..	
	A. E. MUSSARD ..	Bukalasa. ..	
	W. P. BEATTIE ..	Mbale ..	
	J. G. SMITHSON ..	Kawanda ..	New appointment. Seconded to the Bugishu Coffee Scheme.
	G. J. WEBB ..	Serere. ..	New appointment.
C.—LABORATORIES DIVISION			
<i>Senior Research Officer .. Senior Entomologist and Entomologists ..</i>	J. D. JAMESON, O.B.E. ..	Kawanda ..	
	A. P. G. MICHELMORE ..	Kawanda. ..	Proceeded on leave 18-6-53.
	T. E. T. TROUGHT ..	Kawanda. ..	

Title	Name	Station	Remarks
<i>Senior Chemist and Chemists</i>	P. R. STEPHENSON ..	—	Seconded to East Africa Locust Survey Organisation.
	DR. E. M. CHENERY ..	Kawanda	Proceeded on leave 18-5-53.
<i>Senior Botanist and Botanists</i>	W. R. MILLS ..	Kawanda	
	D. G. THOMAS ..	Kawanda	
	W. HURST ..	Serere	
	B. J. T. BALDWIN ..	Kawanda	New appointment.
<i>Curator, Botanic Gardens</i>	C. SANDISON ..	Entebbe.	
<i>Laboratory Technician</i>	E. W. HUGHES ..	Kawanda	New appointment.

D.—SENIOR ASSISTANT AND ASSISTANT AGRICULTURAL OFFICERS

Name	Station	Name	Station
A. Kanya ..	Serere.	Y. K. Maviri ..	Kampala.
H. R. Berunga ..	Mubende.	S. M. N. Kijambu ..	Masaka.
Z. H. Kwebiha ..	Hoima.	E. Rwakaikara ..	Masindi.
Y. M. Kaidzi ..	Kampala.	I. M. Luzinda ..	U. K. Scholarship.
P. Sempa ..	Serere.	E. Kyagaba ..	Serere.
G. L. Kigundu ..	Bukalasa.	J. G. Wanyoto ..	Mbale.
P. M. Sali ..	Mbarara.	P. S. Bulera ..	Busoga.
Y. K. Musisi ..	Kawanda.	Z. K. Sekide ..	Mubende.
H. D. Mubiru ..	Kawanda.	H. G. N. Semambo ..	Kampala.
Z. K. Katerega ..	Bukalasa	R. K. Kachope ..	Arua.
S. M. B. Mutagwanya ..	U. K. Scholarship	I. M. Bulikiro ..	Mbarara.
E. B. Sarulo ..	Mbale.	Z. K. Banagajja ..	Kabale.
A. K. Mulera ..	Bukalasa.	A. G. Kibulo ..	Mbale.
A. A. Kalanzi ..	Kampala.	I. N. Kimoino ..	Jinja.
F. H. O. M. Zake ..	Masaka.	H. W. Muloki ..	Serere.
T. K. Oum ..	Gulu.	S. L. Takirambudde ..	Kitgum.
I. B. O. Baguna ..	Mbarara.	Z. N. Wanyama ..	Soroti.
M. S. K. Makumbi ..	Busoga.	S. B. Kikuli ..	Serere.
J. M. Sekimpi ..	Kampala.	J. A. Wandera ..	Arua.
Y. E. Onaba ..	Serere.	S. K. Mukasa ..	Serere.
G. F. K. Sagala ..	Seconded.	I. S. Musisi ..	Soroti.
O. L. Lalobo ..	Lira.	L. M. Kaboha ..	Fort Portal.
E. J. Kalanzi ..	Bukalasa.	D. E. Kawalya ..	Arua.
Y. K. Musitwa.	Kampala.	I. S. Laker ..	Lira.
E. D. Biruma ..	Busoga.	F. J. Luswata ..	Kabale.
E. W. K. Wamala ..	Kampala.	P. F. Kunya ..	Jinja.
B. M. Kagolo ..	Soroti.	S. K. Sengendo ..	Kabale.
B. Z. K. Kakoko.	Kabale.	I. C. Ssozi ..	Bukalasa.
Y. B. Kidza ..	Bukalasa.	I. L. Lubwa ..	Gulu.
Y. Yiega ..	Fort Portal.		